



Ames Procedural Requirements

APR 8500.1

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COMPLIANCE IS MANDATORY

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PREFACE

P.1 PURPOSE

a. This Ames Procedural Requirement (APR) establishes procedures and instructions to ensure activities conducted at Ames Research Center (ARC, “Center”) comply with applicable Federal, State and local environmental laws, regulations and Executive Orders and NASA policies and procedures. In addition, it assigns authority, responsibility and requirements related to environmental compliance.

P.2 APPLICABILITY

a. This directive is applicable to ARC and associated facilities, e.g., NASA Research Park, etc.

b. This directive applies to contractors, grant recipients, or other parties (e.g. other federal agencies) to agreements only to the extent specified or referenced in the appropriate contracts, grants, or agreements.

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

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

P.3 AUTHORITY

a. NPD 8500.1, NASA Environmental Management

b. NPR 4300.1, NASA Personal Property Disposal

c. NPR 8530.1, NASA Sustainable Acquisition

d. NPR 8553.1, NASA Environmental Management System

e. NPR 8580.1, Implementing the National Environmental Policy Act and Executive Order 12114

f. APD 8500.1, Ames Environmental Policy

g. APR 8553.1, Ames Environmental Management System

P.4 APPLICABLE DOCUMENTS AND FORMS

Applicable documents and forms are listed in each chapter.

P.5 MEASUREMENT/VERIFICATION

a. Verification of conformance to requirements in this directive are measured through Center and Responsible Organizational management reviews, self-assessments, and subsequent analysis and reports of conformance to requirements, as well as periodic internal audits.

- b. The majority of environmental regulations include specific requirements to assess compliance. These are monitored by external regulatory agencies.
- c. NASA also monitors for compliance every three (3) years through the headquarters-led Energy and Environmental Functional Review. Between these reviews the ARC Environmental Management Division (EMD) performs annual internal audits of compliance using the Environmental Management System (EMS).
- d. Metrics are tracked using Center Level Management Objectives, as required.

P.6 CANCELLATION

- a. APR 8500.1, Ames Environmental Procedural Requirements dated March 15, 2011.
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Eugene Tu
Director

DISTRIBUTION STATEMENT:

Internal and external distribution.

CHAPTER 1 GENERAL RESPONSIBILITIES

1.1 Program and Project Managers shall:

- a. Implement environmental, energy and water conservation, and efficiency policies and requirements within existing programs, projects, and activities including environmental life-cycle planning, development, execution, and disposition activities.
- b. Ensure that requirements of the National Environmental Policy Act (NEPA) are satisfied for any proposed new or modified program and projects.
- c. Coordinate with the Environmental Management Division on both existing and new programs, projects, and activities to ensure regulatory compliance and effective implementation of environmental, energy and water conservation, and efficiency requirements.
- d. Comply with this directive.

1.2 Organizational Directors, Division Chiefs, Branch Chiefs, Section Heads, Supervisors, Managers, and Contracting Officer's Representatives (CORs) shall:

- a. Implement ARC policy and procedures for prevention, control, and abatement of environmental pollution, energy and water conservation and efficiency, and protection of natural and cultural resources in accordance with this directive and APR 8553.1.
- b. Establish and maintain internal environmental compliance controls encompassing both management and functional responsibilities in accordance with this directive and APR 8553.1.
- c. Provide timely responses and appropriate corrective or remedial actions, as required, to address environmental requirements.
- d. Designate responsibility for environmental pollution prevention, control, and abatement to appropriate individuals and include appropriate elements in their performance plans.
- e. Incorporate this directive into all on-site support service contracts.
- f. Fund projects or actions needed to prevent, control, or abate environmental pollution within the organization, division, branch, or unit.
- g. Inform the Environmental Management Division early in the planning stage, when a program, project or activity will result in the storage of hazardous materials, emission of pollutants or contaminants, generation of hazardous waste, or an effect on protected natural or cultural resources.
- h. Incorporate environmental compliance, energy efficiency, water efficiency and conservation, and other sustainability requirements in acquisition planning.

1.3 All ARC employees, contractors, Resident Agencies, and NASA Research Park (NRP) Partners or Tenants shall:

- a. Report identified environmental protection problems to line management or to the Environmental Management Division.

b. Cease and desist any action, operation, or project when so required by the Environmental Management Division

1.4 The Environmental Management Division (Code JQ) shall:

a. Advocate, manage, and allocate assigned environmental program financial resources, both for Environmental Compliance and Restoration (ECR) and Center Operations resources and direct reimbursements.

b. Serve as the Center representative to the U.S. Environmental Protection Agency (EPA), other Federal, State, and local agencies, and to NASA Headquarters regarding prevention, control, and abatement of environmental pollution and protection of natural resources and archaeological resources, including obtaining the requisite permits or approvals, in NASA approved or funded programs, projects, and activities.

c. Negotiate compliance schedules with Federal, State, or local environmental regulatory agencies and assure that if such negotiations commit NASA to specific actions having budgetary impact beyond the amounts already allocated to the Center for that purpose, the agreement(s) are coordinated, in advance, with the cognizant Institutional Director and/or Program Associate Administrator and the NASA Headquarters Director, Environmental Management Division.

d. Have the authority to cause any person at Ames Research Center (ARC, "Center") to cease and desist when their action, operation, or project is releasing or discharging, or is about to release or discharge, any unpermitted pollutant, contaminant, or hazardous waste into the environment, or is having, or is about to have, an unpermitted effect on protected natural, cultural, or archaeological resources.

e. Provide guidance for compliance with environmental policies, procedures, requirements, and processes, Federal, State, and local environmental laws, regulations and Executive Orders, NASA policies and procedures, and the NASA Sustainability Report and Implementation Plan.

f. Ensure oversight and management of ARC's implementation of NASA environmental compliance requirements.

g. Assist project managers and CORs in ensuring that required environmental, energy and water conservation and efficiency, and other sustainability practices are clearly identified in the requirements documents that are forwarded for procurement action.

h. Develop and submit annual Environmental Compliance and Restoration (ECR) budget.

i. Support Headquarters-led Energy and Environmental Functional Reviews to ensure that Center programs, projects, facilities, systems, and operations comply with environmental requirements.

j. Conduct environmental self-assessments and track corrective actions at ARC to assess progress toward compliance with ARC environmental management policy and procedures.

k. Promote cost effective waste prevention and recycling or reuse of materials in all facilities at ARC,.

- l. Develop and implement an internal awards and recognition program focused on environmental leadership.
- m. Serve on NASA advisory boards, panels, and working groups in accordance with their charters as coordinated and approved by ARC and Headquarters senior management.
- n. Serve on the NASA Headquarters Environmental Management Board (EMB) as a voting member and participate in Agency environmental management committee, working group, and community of practice activities.
- o. Report information regarding environmental management activities to the Assistant Administrator for Strategic Infrastructure or designee.
- p. Identify laws and regulations to which ARC must adhere and develop ARC policy and procedures to implement the identified laws and regulations.
- q. Maintain records for the time intervals specified in the regulations.
- r. Inform potentially affected personnel and organizations of all changes in applicable Federal, State, and local regulations

1.5 The Office of General Counsel (Code DL) shall:

- a. Provide interpretation of environmental laws, regulations, and Executive Orders, as requested.
- b. As appropriate, assist and represent the Center in negotiations with regulatory agencies and with other potentially responsible parties (PRP) regarding liability for remediating contamination.
- c. Represent the Center in environmental legal proceedings.

1.6 The Office of Communication (Code DO) shall:

- a. Assist the Environmental Management Division and other divisions responsible for environmental management in informing the community of environmental, energy and water conservation and efficiency, and other sustainability programs, projects, and activities at ARC.
- b. Provide support at public meetings regarding environmental affairs.
- c. Assist in updating and coordinating implementation of the outreach components of the Ames Environmental Justice Strategy.

1.7 The Acquisition Division (Code JA) shall:

- a. Implement a Sustainable Acquisition program, including ensuring that acquisition of environmentally preferable products and services is conducted in coordination with Environmental Management Division.
- b. Follow Environmental Management Division guidance to ensure that all applicable requirements for environmental compliance, energy and water conservation and efficiency, and other sustainable practices are included in contracts.

- c. Enforce environmental requirements of contracts.

1.8 The Logistics and Documentation Services Division (Code JS) shall:

- a. Manage non-hazardous solid waste (not including construction and demolition debris and landscaping materials) disposal and recycling or reuse, including establishing an annual goal for diverting landfill waste and recycling or reusing materials consistent with Federal and Agency goals, e.g., under the NASA Sustainability Report and Implementation Plan, and reporting progress on attaining these goals annually to the Environmental Management Division.
- b. Provide a centralized procurement, storage, tracking, and distribution of hazardous materials in accordance with the Center-approved chemical data management information system.

1.9 The Facilities Engineering and Real Property Management Division (Code JC) shall:

- a. Manage non-hazardous solid waste disposal and recycling or reuse associated with construction and demolition and landscaping, including establishing an annual goal for diverting landfill waste and recycling or reusing construction and demolition debris and landscaping materials consistent with the NASA Sustainability Report and Implementation Plan and Agency goals, and reporting progress on attaining these goals annually to the Environmental Management Division.
- b. Coordinate and implement Ames Energy Efficiency and Water Conservation programs in accordance with guidance from the Environmental Management Division.
- c. Operate and maintain the drinking water, industrial wastewater, reclaimed (recycled) water, and storm water systems in compliance with NASA permits.
- d. Coordinate environmentally and economically beneficial practices on Federal landscaped grounds and an integrated pest management program with guidance from the Environmental Management Division.
- e. Provide a COR for Environmental Compliance and Restoration-funded construction projects, when requested by the Environmental Management Division.

1.10 The Protective Services Office (Code JP) shall:

- a. Provide emergency response in the event of a hazardous material emergency, a spill, or other environmental emergency.
- b. Coordinate with the Environmental Management Division and Occupational Safety, Health, and Medical Service Division to test NASA environmental emergency response procedures.
- c. Assist the Environmental Management Division in conducting follow-up investigations.

1.11 The Occupational Safety, Health, and Medical Service Division (Code QH) shall:

- a. Provide technical support during environmental emergency response and follow-up actions to assure the health and safety of personnel.
- b. Coordinate with the Environmental Management Division and Protective Services Office to test NASA environmental emergency response procedures.
- c. Assist the Environmental Management Division in conducting follow-up investigations, when requested.

CHAPTER 2 AIR POLLUTION CONTROL

2.1 Applicable Documents and Forms

- a. APR 8715.1, Chapter 30, Asbestos Management Plan.
- b. TSF-09-003, Work Instruction for Reporting SVS NOx Analyzer System Failure¹
- c. Clean Air Act (CAA) 1970, 42 U.S.C. §§ 7401 et seq. (1970); Pub. Law 101-549 amended Nov 15, 1990.²
- d. Clean Air Act New Source Review and Conformity Determination Regulations 40 CFR § 51.307 and 40 CFR Part 93 Subpart B, respectively.³
- e. EPA Air Programs: 40 Code of Federal Regulation (CFR), Parts 50 to 99, Air Programs Regulations – Protection of Environment, EPA, Air Programs.⁴
- f. California Clean Air Act (CCAA) of 1988.⁵
- g. California Air Pollution Laws (Health and Safety Code Division 26).⁶
- h. BAAQMD Synthetic Minor Permit.⁷
- i. Bay Area Air Quality Management District (BAAQMD) Rules and Regulations⁸
- j. California Code of Regulations (CCR) Title 13 Division 3, Chapter 9, Off-Road Vehicles and Engines Pollution Control Devices⁹
- k. CCR Title 13 Division 3 Chapter 15. Additional off-Road Vehicles and Engines Pollution Control Requirements¹⁰
- l. CCR Title 17 Division 3 Chapter 1 [Air Resources Board] Subchapter 7.5 Airborne Toxic Control Measures (ATCM)¹¹

2.2 Personnel Training and Certification

2.2.1 Training for Operators of Air Emission Sources includes:

- a. A review of applicable rules/regulations and/or permit conditions for a regulated process, operation, or piece of equipment, including how to properly maintain and submit records to the Environmental Management Division for compliance review.

¹ Contact Code TSF Branch Chief

² <https://www.epa.gov/clean-air-act-overview/clean-air-act-text>

³ <https://www.law.cornell.edu/cfr/text/40/chapter-I/subchapter-C>

⁴ <https://www.law.cornell.edu/cfr/text/40/chapter-I/subchapter-C>

⁵ <https://ww3.arb.ca.gov/ei/drei/maintain/legalrequirements.pdf>

⁶ https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=26.&title=&part=5.&chapter=1.&article

⁷ https://www.baaqmd.gov/~media/files/engineering/public-notices/2012/23438/a0550_2012-3_sm-pe-23438.pdf

⁸ <https://www.baaqmd.gov/rules-and-compliance/current-rules>

⁹ [https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=IE51B26B0D46911DE8879F88E8B0DAAAE&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=IE51B26B0D46911DE8879F88E8B0DAAAE&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))

¹⁰ [https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I0F0AEE10D46A11DE8879F88E8B0DAAAE&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)&bhcp=1](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I0F0AEE10D46A11DE8879F88E8B0DAAAE&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)&bhcp=1)

¹¹ [https://govt.westlaw.com/calregs/Document/I365FE430D60811DE88AEDDE29ED1DC0A?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Document/I365FE430D60811DE88AEDDE29ED1DC0A?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default))

- b. A review of NASA's air pollution sources and their compliance requirements.
- c. A review of BAAQMD Regulation 1 definitions and applications to this chapter.
- d. New or modified emissions units (i.e. processes, equipment) shall be brought to the attention of NASA's Air Pollution Specialist to determine if a permitting action is required.
- e. Guidance shall be provided to the applicant for emission units requiring application submittal(s) as well as compliance assistance with applicable rules/regulations.

2.3 Responsibilities

2.3.1 General Requirements for Operators of Air Emission Sources

2.3.1.1 Operators of Air Emission Sources shall:

- a. Operate air pollution sources (i.e. permitted, registered, and exempt) in compliance with permit conditions. For specific information, contact the Environmental Management Division prior to initiating construction or operation, or prior to changing the operation of an air pollution source.
- b. Participate in Agency and Center initiatives to reduce or control greenhouse gases.
- c. Maintain records and make records available upon request by the EMD.
- d. Report proposed new emission unit(s) and/or proposed modification(s) to existing emission units to the Environmental Management Division. Determination(s) regarding the appropriate permitting action(s) will be made by the Environmental Management Division.
- e. Provide, as requested by the Environmental Management Division, documentation and information necessary to submit a substantially complete permit application to BAAQMD.
- f. Maintain records in accordance with permit conditions and/or BAAQMD Rules/Regulations. Operations exempt from permit shall comply with source/prohibitory rules and maintain records verifying compliance with the exemption. Records retention for permitted operations varies from 2-3 years. However, per 40 CFR Part 70, section 70.8 (a)(3) a Synthetic Minor Operating Permit (SMOP) requires records retention for five years. Operations exempt from permitting shall comply with the applicable source/prohibitory rule. Report all breakdowns of air pollution control equipment to the Environmental Management Division immediately.
- g. Immediately report (within 24 hours) excessive emissions resulting from the breakdown of air pollution control equipment or operating equipment to the Environmental Management Division and record:
 - (1) Date and time the breakdown commenced or observed;
 - (2) Date and time the operation was shut down; and
 - (3) Nature of the breakdown (e.g. broken equipment, faulty air/fuel mixture, etc.)
- h. Immediately report all failures to comply with permit conditions/requirements to the Environmental Management Division.
- i. Provide data to the Environmental Management Division so that corrective action plans and reports can be completed on time.

- j. Provide access and points of contact for inspections, assessments, and audits by the Environmental Management Division or regulatory agencies such as the BAAQMD.
- k. Develop and implement corrective actions.
- l. Attend site specific training annually.
- m. For permitted operations, ensure compliance with permit conditions.
- n. For operations exempt from permit, ensure compliance with BAAQMD rules, regulations in order to keep permit exemption.
- o. Monthly records shall be forwarded to the Environmental Management Division within ten calendar days after completing a calendar month. On the tenth of a calendar month, or on the first workday thereafter should the tenth fall on weekend or holiday
- p. Monthly records shall clearly identify 1) permit number(s) provided/assigned by a governmental regulatory agency or 2) indicia that correlates to a permit number(s). Monthly records for permit exempt operations should be clearly marked as 'Permit Exempt' and reference the BAAQMD Rule/Regulation providing the exemption.
- q. Post a copy of the permit on or near the equipment/operation for which a permit to operate has been issued. If it is not possible or practical to post a copy of the permit, a copy shall be available in a nearby location for review/inspection at all times.
- r. Be familiar with permit conditions, readily demonstrate compliance with those conditions, and contact the Environmental Management Division as soon as possible if any inconsistencies are noted between operations and the permit.
- s. Contact the Environmental Management Division to request changes to permit conditions prior to making changes in operation(s).

Note: Changes in operation(s) (e.g. fuel type, solvent used, significant increases in operations, relocation of stationary equipment) may require submitting an application to the BAAQMD and issuance of a revised permit to operate.

2.3.2 Operators of Arc Jet Facilities shall:

- a. Review the requirements of BAAQMD permit annually as permit conditions may change.
- b. Ensure all emissions from the Arc Jet Heater Facilities (S-2381 through 2384) are routed to the nitrogen oxides (NOx) Scrubber System.
- c. Measure the NOx concentration in the exhaust.
- d. Ensure the NOx emissions exhausted to the atmosphere comply with NOx emission standard.
- e. Continuously monitor the pH of each of the stages of the A-2381 Caustic NOx Scrubber System and properly manage the pH of each of these stages.
- f. Record all NOx readings in a log (weekly).
- g. Record all pH readings in a log (daily).
- h. Ensure the NOx concentration for source S-2385 Direct Connect Arc Jet Facility (DCAF) Arc Jet Heater) are properly measured and compliant with permit requirements.

- i. Conduct testing required by BAAQMD permit to ensure the volume of NO_x emissions from Arc Jet Facilities S-2381, S-2382, S-2383, and S-2384 are compliant.
- j. Report breakdowns of the NO_x monitoring equipment lasting more than 24 hours to the Environmental Management Division and the BAAQMD by the following working day; record dates and duration of monitoring system in operation. Refer to document TSF-09-003.
- k. During the periods when NO_x monitoring equipment is out of service, measure the NO_x concentration from the Steam Vacuum System using Draeger tubes designed to detect NO_x in parts per million, at least three times per test run during the period where NO_x emissions are most likely to occur.

2.3.3 Asbestos Removal Activities Managers shall:

- a. Ensure that all asbestos removal activities follow and comply with the requirements specified by APR 8715.1 Chapter 30 and by BAAQMD's Regulation 11 Rule 2.
- b. Contact the Environmental Management Division prior to asbestos removal activities.
- c. Provide documentation demonstrating compliance with the BAAQMD's notification requirements prior to asbestos removal activities.
- d. Notify BAAQMD at least 10 business days before any renovation involving the removal of asbestos in quantities of 100 sq. ft. or more, 100 linear ft. or more, or 35 cubic feet or more.

2.3.4 Operators of Boilers shall:

- a. Review the requirements of the BAAQMD permit annually as permit conditions may change.
- b. Ensure that NO_x and CO emissions for each boiler complies with BAAQMD Regulation 9, Rule 7.
- c. Submit monthly natural gas consumption records to the Environmental Management Division.
- d. Source test boilers with a rated input > 2 MMBTU/hr and <10 MMBTU/hr (i.e. registered boilers) at least once per calendar year by a technician in accordance with Regulation 9, Rule 7 and retain the source test results on site and readily available upon request to the BAAQMD's inspector.

Note: A full source test is not necessarily required. A modified source test approved by BAAQMD can be used to verify stack emissions upon approval of BAAQMD's inspector.

- e. Source test boilers with a rated input ≥ 10 MMBTU/hr (i.e. permitted boilers) at least once per calendar year by a technician in accordance with the Permit to Operate and Regulation 9, Rule 7 and distribute the report as follows:

- (1) Send the source test report to BAAQMD's Compliance and Enforcement Division within 30 days of completing source testing; and
- (2) Provide a copy of the report the Environmental Management Division.

2.3.5 Operators of Aerospace Coatings/Paints shall:

- a. Not exceed 30 gallons of coating usage per consecutive 12-month period.

Note: Aerospace coating operations are currently operating under an exemption per BAAQMD Regulation 2 Rule 1 section 119.2 as of December 2018.

- b. Use coatings that comply with the volatile organic compounds (VOC) limits set by BAAQMD rules and regulations.
- c. Inform the Environmental Management Division if coatings do not comply with VOC standards. The Environmental Management Division will petition BAAQMD to grant use of non-compliant coatings. A copy of the letter granting permission will be forwarded to operators.
- d. Not use more than 20 gallons/year of each non-compliant coating.
- e. Maintain a list of all the materials used (e.g. coatings, catalysts, reducers, thinners, and clean-up solvents) and the VOC content for each material.
- f. Record the volume, mix ratio, and VOC content for each material used to make a coating and compare the resultant VOC content to VOC standards.
- g. Record the total volume of coating applied monthly.

Note: The volume of coating used to coat a surface is the volume of coating prepared for use minus the volume disposed of.

- h. Record the total volume of solvent used monthly.

Note: Solvent used to prepare a surface for paint application, cleaning application equipment, and/or workspaces is the volume of solvent prepared minus the volume discarded.

2.3.6 Operators of Off-Road Diesel-Fueled Equipment shall:

- a. Ensure all Off-Road diesel vehicles (backhoes, tugs, tractors, forklifts, graders, loaders, scrapers, two engine cranes, etc.) rated at or greater than 25 HP have been reported to the Environmental Management Division per California Code of Regulations, section 2449.
- b. Coordinate with the Environmental Management Division to ensure NASA's Off-Road diesel vehicle fleet meets the NOx and Particulate Matter (PM) emission requirements of the California Air Resources Board (CARB).

2.3.7 Operators of On-Road Heavy-Duty Diesel Vehicles shall:

- a. Ensure all on-road diesel vehicles with a gross vehicle weight of 14,000 pounds or more have been reported to the Environmental Management Division per California Code of Regulations, section 2025.
- b. Coordinate with the Environmental Management Division to ensure ARC's On-Road diesel vehicle fleet meets the NOx and PM emission requirements of CARB's On-Road Diesel Vehicle Regulation (CCR Title 13, Section 2025).
- c. Ensure all diesel vehicles with gross weight of 10,000 pounds or more do not idle for more than 5 minutes per California Code of Regulations, section 2485.

2.3.8 **Operators of Large Spark Ignition (LSI) Equipment** shall ensure all LSI equipment rated 25 HP or greater and having a greater than 1.0-liter displacement have been reported to the Environmental Management Division per [California Code of Regulations, section 2775](#).

2.3.9 Operators of Engines > 50 HP shall:

- a. Review the requirements of the BAAQMD permit annually as permit conditions may change.

- b. Ensure standby/portable engines do not exceed the number of hours of non-emergency use set by the permit condition.
- c. Ensure a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) is installed, operated and properly maintained where required.
- d. Record the operating hours for maintenance activities and for emergency activities. For portable engines, record the location where the engine is used.
- e. Clearly mark if the operation is maintenance or emergency.
- f. In the event of an emergency operator shall provide the asset number of the engine and check mark the most appropriate description of the event provided below, which reference BAAQMD Regulation 9 Rule 8 section 231 subsections 1-7:
 - (1) Unforeseeable loss of regular natural gas supply.
 - (2) Unforeseeable failure of regular electric power supply;
 - (3) Mitigation or prevention of an imminent flood;
 - (4) Mitigation of or prevention of an imminent overflow of sewage or wastewater;
 - (5) Fire or prevention of an imminent fire;
 - (6) Failure or imminent failure of a primary motor or source of power, but such time as needed to repair or replace the primary motor or source of power; or
 - (7) Prevention of the imminent release of hazardous material.

2.3.10 Operators of Ethylene Oxide (EO) Sterilizers shall:

- a. Review the requirements of your permit annually as permit conditions may change.
- b. Not use more than 25 pounds of ethylene oxide sterilant gas per consecutive twelve-month period.
- c. Maintain a log of sterilant gas purchased and the date and time of each sterilizer operation cycle, retain such records onsite for two years from the date of entry, and make this log available upon request.
- d. Operate and evacuate the sterilizer chamber in a "leak free" manner that prevents the release of fugitive ethylene oxide emissions to the atmosphere.
- e. Not operate the sterilizer chamber unless emissions of ethylene oxide are abated by the integrated EO abater and replace the catalyst bed as recommended by the manufacturer.
- f. In accordance with the manufacturer's procedure, test the EO abater for efficiency at installation and annually thereafter to ensure proper operation and determine when the catalyst cell needs to be replaced.

2.3.11 Operators of Gasoline Dispensing Facilities shall:

- a. Review the requirements of your permit annually as permit conditions may change.
- b. Ensure that the vapor recovery equipment is properly maintained and inspected.
- c. Ensure that the gasoline dispensing facilities meet their annual testing and inspection requirements and complete the following::

- (1) Notify BAAQMD's Source Test Section by email at gnotice@baaqmd.gov or by FAX at (510) 758-3087, at least 48 hours prior to conducting any testing.
- (2) Submit test results to the BAAQMD within 15 days of the test.
- (3) Forward a copy of the test results to the Environmental Management Division within 15 days of the test.

2.3.12 Operators of Laser Seeding Activities

2.3.12.1 NASA's Laser Seeding Operations are exempt from permit per BAAQMD Regulation 2 Rule 1 section 103.3 (i.e. exemption(s) for unique operations) provided they meet the following criteria:

- (1) VOC emissions shall not exceed 10 lbs/day or
- (2) VOC emissions that exceed 10 lbs/day shall be less than 150 pounds per consecutive 12-month period.

2.3.12.2 Records of solvent usage will be maintained to validate the exemption listed in Regulation 2 Rule 1, section 28. Within 10 days after the end of each calendar month, solvent use records shall be submitted to the Environmental Management Division to retain the records onsite for two years.

2.3.13 Operators of Oil/Water Separators shall:

Note: NASA's oil-water separator has a throughput < 200 gallons/day and is exempt from permit per BAAQMD Regulation 2 Rule 1 section 128. The operating standards, per Regulation 8 Rule 8, remain in effect.

- a. Visually inspect the roof seals, access doors and other openings on at least a semiannual basis to ensure that no cracks or gaps greater than .032 cm (0.125 in) occur in the roof or between the roof and the wall and that the access doors and other openings are properly gasketed. (basis: BAAQMD Regulation 8-8-301)
- b. Maintain records of the throughput to validate the exemption per Rule 2 Regulation 1 section 128.
- c. Submit records within 10 days from the end of each calendar month to the Environmental Management Division.
- d. Perform inspections on a semiannual basis to demonstrate compliance with Regulation 8 Rule 8 section 301 and 503.
- e. Retain records for a period of two years in accordance with Regulation 8-8-503.

2.3.14 Operators of Open Burn Activities shall contact the Environmental Management Division prior to any open burn activity (i.e. combustion of any material outdoors).

Note: To reduce the harmful effects of smoke on public health, open burning is banned except as specified by the Open Burning Regulation 5 section 401. BAAQMD must be notified of all open burns via the notification forms. A notification can be faxed (415) 928-0338 or mailed to BAAQMD, Attn: Mail Stop – Open Burn Forms, 375 Beale Street, Suite 600, San Francisco CA 94015. Mailed notifications must be postmarked at least five calendar days prior to burning. Structural fire training notifications must be postmarked at least 10 business days prior to burning.

2.3.15 Operators of Solvent Wipe Cleaning Operations shall:

- a. Review the requirements of the BAAQMD permit annually as permit conditions may change.
- b. Maintain records of net volume used of solvents used (precursor organic and non-precursor).
- c. Identify the manufacturer and/or product name/ID for each solvent used.
- d. Identify the location (i.e. building and area within the building) where the solvent was used.
- e. Maintain solvent rags/wipes in a closed container when not in use.

2.3.16 Operators of Tub Grinder shall:

- a. Review the requirements of the BAAQMD permit annually as permit conditions may change.
- b. Not operate the tub grinder for more than 500 hours per any consecutive 12-month period.
- c. Control visible dust emissions from the tub grinder by application of sufficient water spray to ensure opacity does not exceed 20 percent for an aggregate sum of three minutes during any hour of operation.

2.3.17 The Environmental Management Division shall:

- a. Maintain an Air Permit Tracking System.
- b. Serve as point of contact for regulatory issues and inspections.
- c. Coordinate audits with site managers and other supervisors responsible for air emissions sources.
- d. Train Operators of Air Emission Sources on permit conditions.
- e. Identify air quality laws and regulations to which ARC must adhere.
- f. Develop ARC policy to implement the identified laws and regulations.
- g. Assist in the development of air-quality mitigation measures.
- h. Gather information for, write, and submit permit applications on behalf of ARC organizations.
- i. Gather information and provide required air permitting reporting to regulatory and other external agencies.
- j. Maintain records for the time intervals specified in the regulations.
- k. Inform potentially affected personnel and organizations of all changes in Federal, State, and local regulations.
- l. Review all plans and drawings for projects that may affect air quality and provide feedback to assure compliance with air permits and regulations.

2.4 Notification Requirements

2.4.1 Below is a list of conditions and associated notifications and/or application submittals to the BAAQMD. For specific information or concerns not addressed in the table below, contact the Environmental Management Division prior to initiating construction or operation of an air pollution source, or prior to changing the conditions of operation of an air pollution source.

No	If This Condition Exists	Then Take This Action
1	Planning open burn activities (fire training, public exhibition, etc.)	Contact the Environmental Management Division. Notification or written approval from the BAAQMD is needed to perform any open burning. Note that only certain open burning activities are allowed.
2	Installing a new boiler	Obtain authorization from the BAAQMD prior to installing or operating a boiler. Boilers rated at less than 2 million BTUs per hour are exempt from permitting requirements. Boilers rated > 2 MMBTU and < 10 MMBTU require registration with BAAQMD. A list of Certified Boilers is maintained by BAAQMD.
3	Purchasing a diesel engine (generator, pump, air compressor, etc.) rated > 50HP	Ensure the diesel engine complies with BAAQMD Rules and Regulations and CARB's Air Toxic Control Measure for Stationary Diesel Engine or Portable Diesel Equipment. Obtain an air permit from the BAAQMD prior to operating the diesel engine. Contact the Environmental Management Division. All new standby emergency diesel engines must be Tier 3 or greater.
4	Newly permitted diesel engine(s) that have been issued an Authority to Construct and plan to operate	Authorized staff (i.e. civil servant) must sign Start-up Notification. The signed notification must be sent to BAAQMD, by fax and/or mail, seven days before the scheduled initial operation. The initial operation shall be coordinated with NASA's Environmental Management Division staff responsible for Hazmat.
5	Installing a liquid storage tank for solvents or fuel with capacity of 250 gallons or greater	Contact the Environmental Management Division. A determination will be made if a permit is required, depending on the solvent or fuel stored. A copy of the Safety Data Sheet (SDS) shall be provided upon request.
6	Newly proposed coatings for use	Coatings must comply with BAAQMD Rules and Regulations. Provide SDS's and Product Data Sheets of coatings to the Environmental Management Division. Contact the Environmental Management Division for assistance.
7	Using Ozone Depleting Substances	Refer to Chapter 15, Sustainability, in this APR. Contact the Environmental Management Division for assistance.

2.5 Records

Record Name	Retention Requirements per BAAQMD Prohibitory Rules/Regulations
Arc Jet Monitoring Records	Minimum of 24 months from the date of entry
Boiler Records	Minimum of 24 months from the date of entry
Coating Usage Records	Minimum of 24 months from the date of entry
Diesel Vehicle Records (applies to vehicles subject to CARB's Off-Road and On-Road Regulations)	Minimum of 36 months from the date of entry
Engine Usage (hours of operation) Records	Engine retention/hours of operation vary. See table provided below.
Ethylene Oxide Sterilizer Records	Minimum of 24 months from the date of entry
Gasoline Dispensing Facility Records	Minimum of 24 months from the date of entry
Laser-seeding Records	Minimum of 24 months from the date of entry
Oil/Water Separators Records	Minimum of 24 months from the date of entry
Solvent Usage Records	Minimum of 24 months from the date of entry
Tub grinder Records (hours of operation and fuel usage)	Minimum of 24 months from the date of entry

2.5.1 Engine Usage Retention/Hours of Operation

Engine Usage (hours of operation and fuel usage) Records - Source Numbers	Reliability Testing	Records Retention
1032-33	Shall not exceed 20 hours per year	At least 2 years
1002, 1004, 1006, 1008, 1010, 1027	Shall not exceed 20 hours per year	At least 3 years
1030	Shall not exceed 30 hours per year	At least 2 years
1031, 2210-11, 2540	Shall not exceed 50 hours per year	At least 2 years
500-01, 1044, 1049, 1055-1059, 1445, 2152, 2330, 2541-42, 2582-2584, 2610, 2880	Shall not exceed 50 hours per year	At least 3 years
1043, 1050	Shall not exceed 50 hours per year	At least 5 years
1041	Shall not exceed 80 hours during any consecutive 12-month period	At least 5 years
1013, 1038	Shall not exceed 100 hours in any calendar year.	At least 2 years
2674	Shall not exceed 500 hours per consecutive 12-month period	Default to 5 years
1053	Shall be limited to 900 hours during any consecutive 12-month period.	At least 2 years
1014-15, 1017, 1026, 1037, 1042-exempt from permit	No permit condition on SMOP	Default to 5 years
1046-48, 1051	No language regarding maintenance hours	At least 5 years

2.6 Reports

BAAQMD Permit Renewal Process – Permit Data Update			
Frequency:	Annual	Reported To:	Bay Area Air Quality Management District
FY or CY Data:	No	Required By:	BAAQMD Regulation 1, Section 441
Internal Report To:	Hazardous Waste Specialist, EMD	Report Due:	September, Annually
Primary Contact	Source Nos	Data Required	
Aviation Management Office	1017, 1026, 1053	Diesel engine hour meter readings records	
Aviation Management Office	Oil Water Separator: Exemption per BAAQMD Regulation 2 Rule 1 section 128	Oily wastewater throughput and inspection records.	
Logistics and Documentation Services Division	1610, 3	Fuel usage, and gasoline dispensing monitoring records	
Logistics and Documentation Services Division	4	Solvent usage	

Logistics and Documentation Services Division	500-501	Diesel engine hour meter readings and fuel usage
Logistics and Documentation Services Division	Aerospace Coatings: Exemption per BAAQMD Regulation 2 Rule 1 section 119.2	Aerospace coating usage
Applied Manufacturing Division	4	Solvent usage
Applied Manufacturing Division	Aerospace Coatings: Exemption per BAAQMD Regulation 2 Rule 1 section 119.2	Aerospace coating usage
Army	4	Solvent usage
Army	Laser Seeding: Exemption per BAAQMD Regulation 2 Rule 1 section 103.3	Solvent usage
Wind Tunnel Division	4	Solvent usage
Applied Manufacturing Division	24334	Ethylene Oxide Usage (Sterilizer)
Applied Manufacturing Division	4	Solvent Usage
Space Science Astrobiology Division	4	Solvent usage
Aviation Systems Division	4	Solvent usage
Aviation Systems Division	Aerospace Coatings: Exemption per BAAQMD Regulation 2 Rule 1 section 119.2	Coating usage
Applied Manufacturing Division	4	Solvent usage
Wind Tunnel Division	Laser Seeding: Exemption per BAAQMD Regulation 2 Rule 1 section 103.3	Solvent usage
Entry Systems and Technology Division	2381-84*, 2424-26**	ARC Jet Monitoring Records, Annual Flow Rate Testing
Entry Systems and Technology Division	2424-26	Natural gas usage, Higher Heating Values, Annual Source Test
Biosciences Division	4	Solvent usage records
Entry Systems and Technology Division	4	Solvent usage records
Applied Manufacturing Division	4	Solvent usage records
Entry Systems and Technology Division	Aerospace Coatings: Exemption per BAAQMD Regulation 2 Rule 1 section 119.2	Coating usage records
Plant Engineering Branch	1002, 1004, 1006, 1008, 1010, 1013-1015, 1027, 1030-33, 1037-38, 1041-44, 1046-51, 1055-59, 1445, 2152, 2210-11, 2330, 2540-42, 2582-84, 2610, 2674, 2880.	Diesel engine hour meter readings

Plant Engineering Branch	24335, 24337, 24936, 24938	Annual source test required for registered boilers
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CHAPTER 3 DRINKING WATER MANAGEMENT

3.1 Applicable Documents

- a. National Primary Drinking Water Regulations, 40 CFR Part 141.
- b. National Secondary Drinking Water Regulations, 40 CFR Part 143.
- c. Control of Lead and Copper 40 CFR 141, Subpart I.
- d. APR 8715.1 Chapter 56, Legionella Control
- e. NASA Ames Research Center Domestic Water Supply Permit, Permit No. 02-17-07P-4300997.
- f. Operation Certification, California Code of Regulations (CCR) Title 22, Division 4, Chapter 13¹²
- g. Uniform Plumbing Code, 2015, International Association of Plumbing and Mechanical Officials (IAPMO).
- h. Consumer Confidence Report, 26 CCR § 22-64483¹³
- i. America's Water Infrastructure Act (AWIA) Sections 2013 and 2018, US EPA¹⁴
- j. California Health and Safety Code, Section 116885¹⁵
- k. Minimizing the Risk of Legionellosis Associated with Building Water Systems, ASHRAE G-12-2000¹⁶

3.2 Personnel Training and Certification

3.2.1 For specific training requirements and regulatory references, refer to the training needs summary in NASA Ames Research Center Safety, Health and Environmental Training Catalog. Class schedule information is available at <https://q.arc.nasa.gov/content/training>.

3.2.2 Drinking Water system operators and environmental Drinking Water staff are required to have State of California State Water Resources Control Board Water Distribution Operator Grade D2 following CCR Title 22 Division 4 Chapter 13 Operation Certification.

3.3 Responsibilities

3.3.1 Consumers of Drinking Water shall:

- a. Inform the Plant Engineering Branch of any significant changes in the color, taste, or odor of drinking water.

Note: Consumers should flush drinking water for up to five minutes after extended periods of non-use.

¹²[https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I0C9BB470D4BA11DE8879F88E8B0DAAAE&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I0C9BB470D4BA11DE8879F88E8B0DAAAE&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))

¹³[https://govt.westlaw.com/calregs/Document/I3A1FE60E9E694409AB64D9CA5ED32CA3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Document/I3A1FE60E9E694409AB64D9CA5ED32CA3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default))

¹⁴<https://www.congress.gov/bill/115th-congress/senate-bill/3021/text>

¹⁵[https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC§ionNum=116885.#:~:text=\(a\)%20By%20July%201%2C,use%20in%20its%20distribution%20system](https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC§ionNum=116885.#:~:text=(a)%20By%20July%201%2C,use%20in%20its%20distribution%20system)

¹⁶https://ashrae.iwrapper.com/ASHRAE_PREVIEW_ONLY_STANDARDS/GL_12_2020

- b. Consume water only from designated drinking sources, such as water fountains, kitchen areas, break rooms, etc.
- c. Follow common safety practices by not using taps in laboratories, workshops, etc., as drinking water sources.
- d. Heed any posted signs regarding drinking water use.
- e. Not alter drinking water systems in any manner without prior notification to, and approval from, the Plant Engineering Branch and Environmental Management Division.

3.3.2 Environmental Management Division (Code JQ) shall:

- a. Maintain and update the NASA ARC Research Center Domestic Water Supply permit.
- b. Prepare and publish the annual Consumer Confidence Report per 26 CCR § 22-64483
- c. Prepare and submit the Annual Report to the Division of Drinking Water (DDW).
- d. Notify employees in the event of unsafe water quality.
- e. Assist in the development of water-quality mitigation measures.
- f. Assist in the development of backflow prevention and cross-connection control programs.
- g. Assist in the development of emergency contingency plans.

3.3.3 Plant Engineering Branch (Code JCM) shall:

- a. Operate and monitor drinking water system and implement water quality mitigation measures.
- b. Provide a State Certified Chief Water Operator.
- c. Provide routine and non-routine drinking water-quality monitoring per the National Primary and Secondary Drinking Water Regulations.
- d. Respond to water-quality complaints.
- e. Operate and maintain backflow prevention and cross-connection control programs.
- f. Develop and implement emergency contingency plans in accordance with AWIA Section 2013 and 2018
- g. Ensure that all routine and non-routine maintenance, repair, and replacement work on the water distribution system is performed.
- h. Ensure that all work is conducted in accordance with the Uniform Plumbing Code and ASHRAE G-12-2000.
- i. Ensure that sufficient disinfection occurs during repair or replacement work on the drinking water distribution system.
- j. Notify Environmental Management Division when projects may impact drinking water quality or require modifications to the current drinking water permit.
- k. Maintain maintenance and replacement records for three years. Provide all required records to EMD on a regular basis and when requested for inspections.
- l. Disable suspect water systems.

3.3.4 Facilities Engineering Branch (Code JCE) shall:

- a. Design and install any new required water quality mitigation measures.
- b. Develop and install backflow prevention and cross-connection control programs.
- c. Implement the Minimizing the Risk of Legionellosis section of the ASHRAE G-12-2000 and APR 8715.1 Chapter 56.

3.3.5 Occupational Safety, Health, and Medical Service Division (Code QH) shall implement the Minimizing the Risk of Legionellosis section of the ASHRAE G-12-2000 and APR 8715.1 Chapter 56.

3.3.6 Contracting Officer's Representatives shall ensure that contractors working with the drinking water distribution system:

- a. Perform all work in accordance with the Uniform Plumbing Code.
- b. Notify the Plant Engineering Branch of any modifications to the original work specifications.
- c. Notify Facility Services Manager prior to work on plumbing systems that may impact, contaminate, or disturb the drinking water system in a facility.

3.4 Requirements

3.4.1 Routine Monitoring

3.4.1.1 The Plant Engineering Branch collects water samples at designated time intervals from routine monitoring locations to ensure that the drinking-water supply at ARC is safe for consumption, as required in the current drinking water permit. Routine monitoring includes sampling for bacteriological, secondary standards constituents, Lead and Copper, and Asbestos.

3.4.1.2 Routine monitoring locations are outlined in the approved site sampling plan.

3.4.1.3 The Plant Engineering Branch conducts quarterly monitoring from the three main distribution lines for disinfection byproducts (DBP).

3.4.1.4 Quarterly monitoring locations are included in the approved site sampling plan.

3.4.1.5 Sample two (2) routine monitoring locations weekly and provide chemical, bacterial, and DBP analytical reports to the Environmental Management Division containing at least the date and place of sampling, plus date and results of analyses for the following items:

- a. pH;
- b. Temperature;
- c. General physical characteristics (color, odor, and turbidity);
- d. Total chlorine residual (If chlorine residual is not detected, contact code JCM, the Plant Engineering Branch for line flushing); and
- e. Total coliform and E. coli

3.4.1.6 Sample two (2) routine monitoring locations and three main distribution lines quarterly and report to the Environmental Management Division at least the date and place of sampling, plus date and results of analyses for DBPs:

- a. Total trihalomethanes (THMs) and

- b. Haloacetic acids (HAAs)

3.4.2 Drinking Water Complaints

3.4.2.1 To evaluate water-quality concerns identified by civil servants, contractor employees, resident agency personnel or NASA Research Park partners, the Plant Engineering Branch shall:

- a. Interview personnel to gather relevant information.
- b. Visually examine the water.
- c. If necessary, collect samples and analyze for the most likely contaminants.
- d. Provide emergency notification and disable suspect water source if necessary.
- e. Notify Environmental Management Division of all water quality complaints within 24 hours of investigation.
- f. Assist Environmental Management Division or Facilities Engineering Branch in the development and implementation of water-quality mitigation measures, when requested.

3.4.3 Lead and Copper Monitoring Program

3.4.3.1 To comply with the requirements of the Final Rule for Lead and Copper Action Levels (Title 40, Section 141 of the Code of Federal Regulations), the Plant Engineering Branch and the Environmental Management Division shall:

- a. Conduct sampling for lead and copper to determine concentrations every three years as part of ARC routine water-quality monitoring, with increased frequency when sample results exceed allowable limits (sampling will be conducted and funded by Plant Engineering Branch).
- b. Prepare a health notice and distribute to persons working in areas or buildings with lead and/or copper levels at or above the EPA action level, as necessary.

3.4.3.2 The EMD shall assist the Plant Engineering Branch in the development and implementation of lead and copper reduction measures where levels exceed the action levels.

3.4.3.3 The EMD shall prepare standardized center notification and educational materials regarding lead and copper in drinking water.

3.4.3.4 The Plant Engineering Branch shall maintain service line material inventory per California Health and Safety code, Section 116885.

3.4.4 Backflow Prevention and Cross-Connection Control Programs

3.4.4.1 Plant Engineering Branch, with technical assistance from the Environmental Management Division, shall:

- a. Adopt operating rules to implement backflow prevention and cross-connection control programs.
- b. Test all backflow-prevention devices at least annually.
- c. Maintain records of all device locations, annual test results, and repairs.
- d. Conduct a survey to identify cross connections.
- e. Interview building contacts regarding water uses.
- f. Conduct building walk-throughs.

- g. Inventory existing backflow prevention devices.
- h. Note equipment related to backflow prevention devices or potential cross connections.
- i. Note degree of hazard associated with water uses.
- j. Propose corrective actions and prepare a cost estimate to complete backflow-prevention-device installation and system repair and provide it to the Center Operations Directorate and the Environmental Management Division management.
- k. Install or modify backflow-prevention devices at potential cross connections, as identified in the survey. Possible problem areas include:
 - (1) Lack of backflow-prevention devices where required.
 - (2) Use of backflow-prevention devices inappropriate for level of hazard.
 - (3) Improper installation of approved backflow-prevention devices.
 - (4) Improper plumbing that may result in potential cross connections.

3.4.5 Emergency Contingency Plan

3.4.5.1 The emergency contingency plan identifies the actions necessary for ARC to prepare for and conduct emergency operations in order to ensure delivery of a safe water supply during disaster events (fires, earthquakes, flooding, power outages, etc.). Plans shall meet the requirements of America's Water Infrastructure Act Sections 2013 and 2018.

3.4.5.2 The Plant Engineering Branch, with technical assistance from the Environmental Management Division, shall:

- a. Designate responsible personnel with clear chain of command and responsibilities.
- b. Maintain an inventory of system resources:
 - (1) Maps and diagrams showing locations of drinking water distribution system.
 - (2) Emergency resources.
 - (3) Emergency equipment and supplier.
 - (4) Emergency contract agreements.
 - (5) Emergency water interconnections.
- c. Develop and maintain a communication network:
 - (1) Designate locations for emergency operations centers and assign responsible personnel.
 - (2) Maintain an emergency contact list with equipment and water suppliers.
 - (3) Coordinate with governmental agencies for emergency, health, and safety protection and technical assistance.
 - (4) Maintain contact numbers for designated personnel of state and county health departments, fire and police departments, and hospitals.
- d. Develop plan for Center notification to water users regarding:
 - (1) Emergency supply sources.
 - (2) Necessary health protection/water disinfection measures.

- (3) Conservation measures.
- (4) Status of supply, repair, and restoration of service.
- (5) Emergency procedures.

e. Implement an action plan according to the following list to maximize the use of reduced human and equipment resources and activate emergency supply interconnections, equipment acquisition, and repairs:

- (1) Assess damage to water system and components.
- (2) Analyze logistics on emergency supply activation and repairs.
- (3) Repair and restore supply service.
- (4) Monitor progress of repairs and restoration.
- (5) Communicate with health officials and water users on supply status.
- (6) Document damage/repairs.
- (7) Service Restoration.
- (8) Resume normal operations.
- (9) Prepare and submit reports to appropriate agencies.

3.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
Chemical Analytical Reports	Plant Engineering Drinking Water Lead	Retain Local Copies at least 10 years after report	Environmental Document Library (EDL), Network Server
Microbiological and Turbidity Analytical Reports	Plant Engineering Drinking Water Lead	Retain Local Copies at least 5 years after report	EDL, Network Server
DBP Analytical Reports	Plant Engineering Drinking Water Lead	Retain Local Copies at least 3 years after report	EDL, Network Server
Complaints Reports	Plant Engineering Drinking Water Lead	Retain Local Copies at least 5 years after report	EDL, Network Server
Maintenance and Repair	Plant Engineering Drinking Water Lead	Retain Local Copies at least 3 years after report	EDL, Network Server
Backflow Prevention Device Location and Annual Tests	Plant Engineering Drinking Water Lead	Retain Local Copies at least 3 years after report	EDL, Network Server
Sanitary Surveys	Plant Engineering Drinking Water Lead	Retain Local Copies at least 5 years after report	EDL, Network Server
Variances or exemptions granted	Plant Engineering Drinking Water Lead	Retain Local Copies at least 5 years after report	EDL, Network Server

3.6 Reports

Monthly Summary of Distribution System Coliform Monitoring

Frequency:	Monthly	Reported To:	State of California Water Resources Control Board, Division of Drinking Water	
FY or CY Data:	CY	Required By:	22 CCR Section 64422	
Internal Report To:	EMD Drinking Water Lead	Report Due:	By 10 th of succeeding month	
Data Source	Primary Contact	Contact Past Reports	Data Required	Units
DW Water Samples	Drinking Water Samplers	EMD Drinking Water Lead	Number of positive coliform tests	CFU

Quarterly Summary of Distribution System DBP Monitoring				
Frequency:	Quarterly	Reported To:	State of California Water Resources Control Board, Division of Drinking Water	
FY or CY Data:	CY	Required By:	22 CCR Section 64422 and 64423	
Internal Report To:	EMD Drinking Water Lead	Report Due:	By 10 th of succeeding month	
Data Source	Primary Contact	Contact Past Reports	Data Required	Units
Drinking Water Samples	Drinking Water Samplers	EMD Drinking Water Lead	Level of THMs and HAA detected in the drinking water	ppb

Quarterly Summary of Distribution System Chlorine Monitoring				
Frequency:	Quarterly	Reported To:	State of California Water Resources Control Board, Division of Drinking Water	
FY or CY Data:	CY	Required By:	22 CCR Section 64422 and 64423	
Internal Report To:	EMD Drinking Water Lead	Report Due:	By 10 th of succeeding month	
Data Source	Primary Contact	Contact Past Reports	Data Required	Units
Drinking Water Samples	Drinking Water Samplers	EMD Drinking Water Lead	Level of residual chlorine detected in the drinking water	ppm

Annual Consumer Confidence Report				
Frequency:	Annually	Reported To:	State of California Water Resources Control Board, Division of Drinking Water & Consumers	
FY or CY Data:	CY	Required By:	26 CCR Section 22-64483	
Internal Report To:	EMD Drinking Water Lead	Report Due:	July 1	
Data Source	Primary Contact	Contact Past Reports	Data Required	Units

SFPUC and Facility Maintenance	EMD Drinking Water Lead	EMD Drinking Water Lead	Compilation of water quality data from prior year	N/A
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Electronic Annual Report				
Frequency:	Annually	Reported To:	State of California Water Resources Control Board, Division of Drinking Water	
FY or CY Data:	CY	Required By:	CHSC §116530	
Internal Report To:	EMD Drinking Water Lead	Report Due:	Varies year-to-year (normally April)	
Data Source	Primary Contact	Contact Past Reports	Data Required	Units
Facility Operations and Maintenance Documents	EMD Drinking Water Lead	EMD Drinking Water Lead	Contact and operational information for the prior year	various

Triennial Lead and Copper Report				
Frequency:	Triennially	Reported To:	State of California Water Resources Control Board, Division of Drinking Water	
FY or CY Data:	CY	Required By:	22 CCR Section 64690.10	
Internal Report To:	EMD Drinking Water Lead	Report Due:	By 10 th day upon completion of sampling period	
Data Source	Primary Contact	Contact Past Reports	Data Required	Units
Drinking Water Samples	Drinking Water Samplers	EMD Drinking Water Lead	Level of lead and copper detected in the drinking water	ppm, ppb

CHAPTER 4 ENVIRONMENTAL CLOSURE REQUIREMENTS

4.1 Applicable Documents

- a. Closure and Post Closure, 22 CCR § 66264.110 through § 66264.120.
- b. Disposal or Decontamination of Equipment, Structures, and Soils, 22 CCR § 66265.114.
- c. Santa Clara County Hazardous Material Storage Ordinance, Santa Clara County Code of Ordinances, Title B, Division B11, Chapter XIII.
- d. Hazardous Materials Storage Tank System Cleaning/Cutting Application, Santa Clara County, Hazardous Materials Compliance Division, HMCD-112-2/2.
- e. Aboveground Tank Closure Permit Application/Closure Plan, Santa Clara County, Hazardous Materials Compliance Division, HMCD-018-1/1.
- f. Unified Program Consolidated Form Hazardous Waste Tank Closure Certification, Unified Program Consolidated Form (UPCF) HWF1249.¹⁷
- g. Underground Storage Tank System Closure Permit Application, UN-003.¹⁸
- h. Closure Application for Aboveground Hazardous Materials Storage Facilities, UN-033.¹⁹
- i. Aboveground Tank System Closure Permit Application, UN-064.²⁰
- j. Tank System On-Site Cleaning Application, UN-066.²¹
- k. Underground Storage Tank System Closure Sampling and Laboratory Analyses Requirements, UN-078.²²

4.2 Responsibilities

4.2.1 **Mission Directorates** shall conduct aboveground and underground hazardous materials storage facility closure activities in accordance with Santa Clara County Ordinance Code, Division B11, Chapter XIII and 22 CCR § 66265.114.

4.2.2 **Tenants and On-Site Partners** shall obtain Closure Permits from the County of Santa Clara for their facilities unless otherwise stated in lease documents.

4.2.3 **Environmental Management Division** shall:

- a. Coordinate with the Occupational Safety, Health, and Medical Service Division of the planned activity and of the facility walkthroughs.
- b. Advise project proponent for the maximum feasible reuse, recycling, and reclamation of facility, equipment, and materials.
- c. Prepare the notification, closure plan and application, and post-closure report for submittal and approval by the appropriate regulatory agencies.

¹⁷ UPCF HWF1249: <http://www.unidocs.org/hazmat/upcf/tank-cleaning/hwf1249.pdf>

¹⁸ UN-003: <http://unidocs.org/hazmat/ust/closure/un-003.pdf>

¹⁹ UN-033: <http://unidocs.org/hazmat/facility-closures/un-033.pdf>

²⁰ UN-064: <http://unidocs.org/hazmat/facility-closures/un-064.pdf>

²¹ UN-066: <http://unidocs.org/hazmat/hazardous-waste/un-066.pdf>

²² UN-078: <http://unidocs.org/hazmat/ust/closure/un-078.pdf>

- d. Inform the Santa Clara County Department of Environmental Health 30 days prior to closure.
- e. Coordinate closure inspection by the regulatory agency.
- f. Provide guidance to facility owner for sampling, when site conditions or regulatory agencies require, to determine if operating the equipment or handling and storing of hazardous materials or waste may have negatively impacted the environment or property. EMD will also evaluate sampling data to identify decontamination and/or mitigation options, and prepare sampling report(s) documenting the sampling effort.
- g. Inform the permittee of the investigation results in adequate time to allow for funding.
- h. Interface with the regulatory agencies.
- i. Maintain copies of records indicating disposition of all hazardous materials/waste and the recycling and reclamation opportunities taken.
- j. Amend the Hazardous Materials Business Plan (HMBP) and environmental permits to reflect changes due to closure.
- k. Prepare the Post Closure Report for approval by the regulatory agency, documenting results of any inspections, decontamination, sampling, mitigation, and final disposition of any hazardous materials or hazardous waste and associated equipment, and of recycling and reclamation opportunities taken.

4.2.4 **Organizations closing facilities, handling or storage areas, or pieces of equipment** shall notify the Environmental Management Division of its intent to cease operations. This includes any facility that:

- a. Has been issued a hazardous materials permit, air permit, industrial wastewater discharge permit;
- b. Has equipment containing oil, PCBs, or other hazardous materials, hazardous waste treatment authorization; or
- c. Stores or utilizes hazardous materials.

4.2.5 The **Organization's Facility Project Manager** shall coordinate the following environmental closure tasks:

- a. Inform the Environmental Management Division at least 120 days prior to the closure activity.
- b. Include costs for closure activities in the organization's budget.
- c. Obtain a NASA ARC construction permit for the planned activity.
- d. Obtain facility and tank closure permits from Santa Clara County Department of Environmental Health. Dependant on project scope the following documents may be required:
 - (1) Closure Application for Aboveground Hazardous Materials Storage Facilities, UN-033.
 - (2) Aboveground Tank System Closure Permit Application, UN-064.
 - (3) Tank System On-Site Cleaning Application, UN-066.
 - (4) Aboveground Tank Closure Permit Application/Closure Plan, Santa Clara County, Hazardous Materials Compliance Division, HMCD-018-1/1.

- (5) Hazardous Materials Storage Tank System Cleaning/Cutting Application, Santa Clara County, Hazardous Materials Compliance Division, HMCD-112-2/2.
 - (6) Unified Program Consolidated Form Hazardous Waste Tank Closure Certification, Unidocs.org, Unified Program Consolidated Form (UPCF) HWF1249.
 - (7) Underground Storage Tank System Closure Permit Application, UN-003.
 - (8) Underground Storage Tank System Closure Sampling and Laboratory Analyses Requirements, UN-078
- e. Plan for the maximum feasible reuse, recycling, and reclamation of facility, equipment, and materials.
- f. Provide access and any requested information to the Environmental Management Division during the closure process.
- g. Implement requirements identified by the Environmental Management Division during closure operations, which may include the following:
- (1) Drain and containerize equipment fluids.
 - (2) Remove or decontaminate all hazardous residues and contaminated containment system components, equipment, structures, etc. per Santa Clara County Hazardous Materials Storage Permit Ordinance, No. NS-517.31.
 - (3) Remove and arrange for the proper disposition of hazardous materials and hazardous wastes.
 - (4) Use properly trained personnel clean up any hazardous waste spills or stains.
 - (5) Provide information regarding proposed disposition of hazardous materials and hazardous wastes.
 - (6) Provide information on the proposed reuse, recycling, or reclamation of equipment or materials.
 - (7) Close hazardous waste treatment systems in a manner that minimizes the need for further maintenance, and controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post closure escape of hazardous waste, hazardous constituents, leachate, contaminated rainfall or run-off, or waste decomposition products to groundwater, surface waters, or to the atmosphere, as prescribed in 22 CCR § 66264.110.
 - (8) Conduct actions described in the approved Closure Plan in a manner that minimizes the need for further maintenance, and controls, minimizes, or eliminates threats to human health and the environment from residual hazardous materials in the handling and storage areas. Demonstrate that hazardous materials handled and/or stored will be removed, disposed, or reused in an appropriate manner.
 - (9) Provide information documenting actions taken to the Environmental Management Division, upon request.
 - (10) Continue performing routine inspections of remaining equipment containing hazardous materials in accordance with applicable requirements.
 - (11) Provide documentation of metal recycling as requested by Environmental Management Division, upon request.

h. Notify the Occupational Safety, Health, and Medical Service Division of the planned activity and of the facility walkthroughs.

4.3 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
County of Santa Clara Official Notice of Inspection	Hazardous Materials Specialist, EMD	*Permanent* Transfer to NARA 7 years after program, project, or incident closes	Network Server, Environmental Document Library, Post Closure Report
Sample Data	Hazardous Materials Specialist, EMD	*Permanent* Transfer to NARA 7 years after program, project, or incident closes	Network Server, Environmental Document Library, Post Closure Report
Bills of lading, bills of sale, TSDF-signed copies of hazardous waste manifests	Inventory Holder and EMD	*Permanent* Transfer to NARA 7 years after program, project, or incident closes	Network Server, Environmental Document Library, Post Closure Report

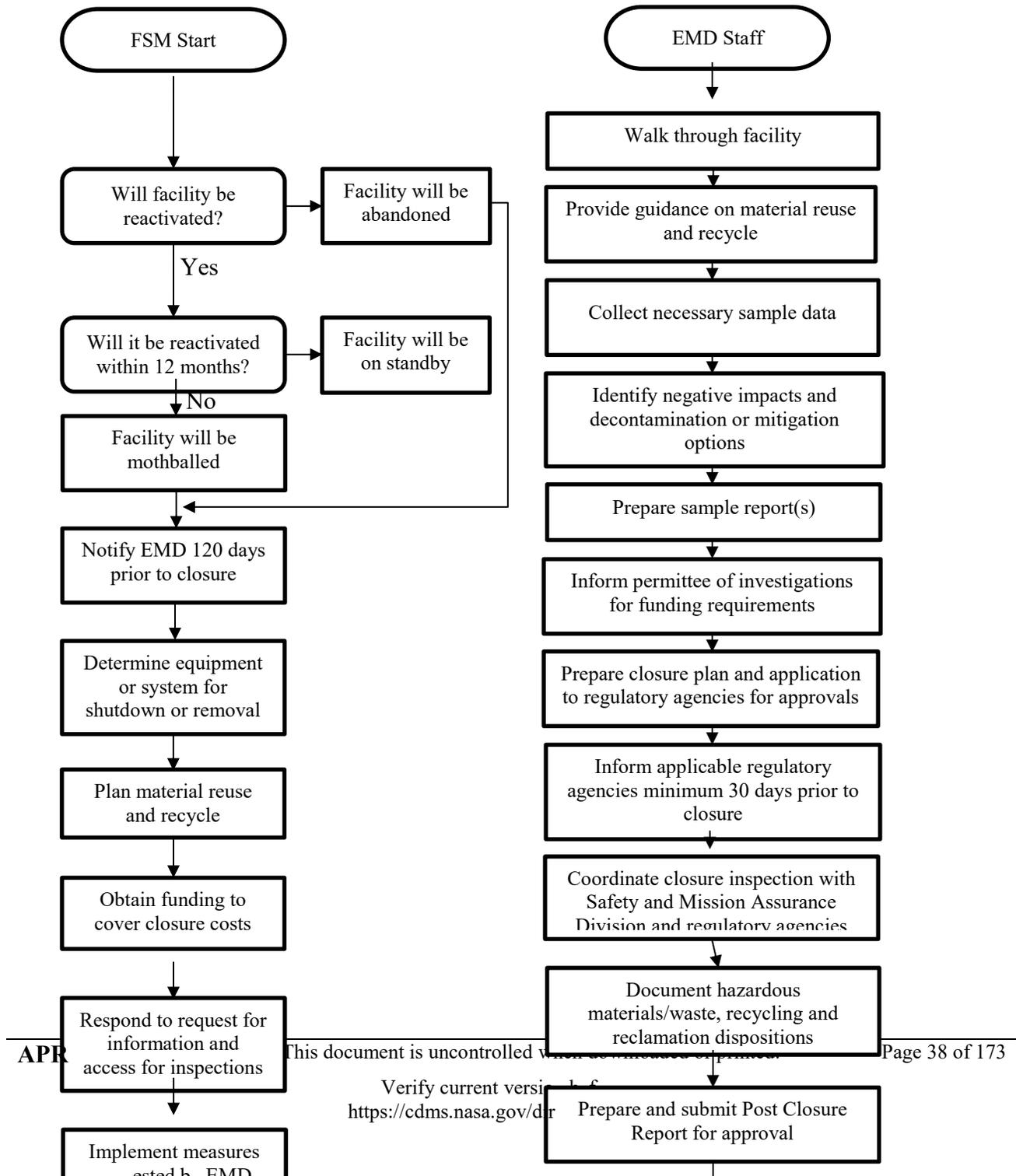
4.4 Reports

Closure Plan Report				
Frequency:	As Needed	Reported To:	County of Santa Clara	
FY or CY Data:	NA	Required By:	Santa Clara County Hazardous Materials Storage Permit Ordinance, No. NS-517.72	
Internal Report To:	Hazardous Materials Program Manager	Report Due:	30 days prior to the start of closure activities	
Data Source	Primary Contact	Contact Past Reports	Data Required	Units
Facility Service Managers	Various contacts	Hazardous Materials Program Manager	Closure activities information, i.e., work plans, drawings, etc.	NA

Post Closure Report			
Frequency:	As Needed	Reported To:	County of Santa Clara
FY or CY Data:	NA	Required By:	Santa Clara County Hazardous Materials Storage Permit Ordinance, No. NS-517.31

Internal Report To:	Hazardous Materials Program Manager	Report Due:	30 days after to the completion of closure activities	
Data Source	Primary Contact	Contact Past Reports	Data Required	Units
Facility Service Managers	Various contacts	Hazardous Materials Program Manager	Recycled Materials disposition records, i.e., bill of ladings, bill or sales, recycling facility	NA

Facility Closure Work Flow Plan



CHAPTER 5 EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT

5.1 Applicable Documents and Forms

- a. Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986, 42 U.S.C. § 11001-11050.
- b. Emergency Response to Hazardous Substances, 29 CFR 1910.120 (q).
- c. Chemical Accident Prevention Provisions, 40 CFR Part 68.
- d. National Oil and Hazardous Substance Contingency Plan, 40 CFR Part 300.
- e. Emergency Planning and Notification, 40 CFR Part 355.
- f. Hazardous Chemical Reporting: Community Right-to-Know, 40 CFR Part 370.
- g. Toxic Chemical Release Reporting: Community Right-to-Know, 40 CFR Part 372.
- h. Toxic Release Inventory, Form R , EPA Form #9350-1²³.
- i. Hazardous Materials Release Response Plans and Inventory, California Health and Safety Code, Chapter 6.95, Article 1²⁴
- j. California Hazardous Materials Management, California Health and Safety Code, Chapter 6.95, Article 2.²⁵
- k. Santa Clara County Hazardous Materials Storage Ordinance, Santa Clara County Code of Ordinances, Title B, Division B11, Chapter XIII²⁶.
- l. NASA Ames Spill Prevention Control and Countermeasures (SPCC) Plan²⁷.

5.2 Personnel Training and Certification

5.2.1 Personnel preparing Toxic Release Inventory threshold determinations and potentially reporting NASA Ames release information shall take the following training provided by the EPA:

- a. Basic and Advanced TRI Reporting Concepts.
- b. TRI-MEweb Tutorials (if reporting is required).

5.3 Responsibility

5.3.1 **Office of the Director** shall:

- a. Develop and maintain a Center Emergency Response Plan per EPCRA requirements.

²³https://ofmpub.epa.gov/apex/guideme_ext/guideme/file/ry_2019_form_r.pdf

²⁴https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=20.&title=&part=&chapter=6.95.&article=1

²⁵https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=20.&title=&part=&chapter=6.95.&article=2

²⁶https://library.municode.com/ca/santa_clara_county/codes/code_of_ordinances?nodeId=TITBRE_DIVB11ENHE_CHXIIIH_AMAST

²⁷<https://environmentalmanagement.arc.nasa.gov/reports/SPCC-2018/NASA%20Ames%20SPCC%20June%202018.pdf>

- b. Consult with Ames Environmental Management Division and NASA Headquarters about the best techniques and methods related to emergency planning and community right-to-know.
- c. Promote employee awareness of emergency planning and community right-to-know through training and active information dissemination.

5.3.2 Hazardous Material Users shall:

- a. Maintain chemical use amounts for chemicals listed on the Toxics Release Inventory (<https://www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals>) that may be used in amounts of 1,000 pounds per year or more.
- b. Maintain chemical use amounts for any amount of persistent, toxic, or bioaccumulative chemicals and compounds (<https://www.epa.gov/toxics-release-inventory-tri-program/persistent-bioaccumulative-toxic-pbt-chemicals-covered-tri>)
- c. Maintain chemical inventory as required in Hazardous Material Storage, Chapter 6.

5.3.3 Environmental Management Division shall:

- a. Serve as technical point of contact for all regulatory agency interface and correspondence.
- b. Develop and maintain the Spill Prevention, Control, and Countermeasures (SPCC) Plan and Facility Response Plan (FRP).
- c. Develop and maintain the Hazardous Waste Contingency plans for N265 and other EMD storage facilities. Per 40 CFR Part 300.
- d. Review Hazardous Waste Contingency Plans for other qualifying ARC facilities.
- e. Submit Centerwide above-threshold hazardous materials inventory and Hazardous Material Business Plans to Santa Clara County's reporting system, the California Environmental Reporting System (CERS). Provide access to the ARC Fire Department as required in CA HSC Chapter 6.95. Refer to Hazardous Materials, Chapter 6, for more information.
- f. Submit the Toxic Release Inventory, Form R, to the Environmental Protection Agency (EPA) as required 40 CFR 372.
- g. Develop and deliver required training programs to ensure compliance and promote employee awareness.
- h. Inform potentially affected personnel and organizations of all changes in Federal, State, and local regulations.

5.3.4 Center Operations Directorate shall:

- a. Provide the core emergency response units for ARC and Moffett Federal Airfield (MFA) including:
 - (1) 911 Dispatch
 - (2) ARC Fire Department
 - (3) Protective Services
 - (4) Disaster Assistance and Rescue Team (DART)
 - (5) Damage and Utility Control Team (DUCT)

5.3.5 **Occupational Safety, Health, and Medical Service Division** shall maintain ARC hazardous materials inventory for below threshold chemicals.

5.4 Requirements

5.4.1 Emergency Notification and Planning

5.4.1.1 Extremely Hazardous Substances

a. The Environmental Management Division notifies Santa Clara County Department of Environmental Health and the Local Emergency Planning Committee (LEPC) if extremely hazardous substances are present onsite in quantities exceeding the threshold planning quantity (TPQ.) See 40 CFR Part 355, Appendix A —The List of Extremely Hazardous Substances and Their Threshold Planning Quantities for TPQs for relevant substances.

b. In California, the LEPC provides facility notification information to the administering agencies designated under California law. Initial notification for Section 302 of EPCRA is a notice on company letterhead indicating that extremely hazardous substances are being handled at ARC and that the Center may have to comply with Title III.

c. The Environmental Management Division filed a notification and periodically updates the list of extremely hazardous substances.

5.4.1.2 Reportable Quantity (RQ) Releases

a. Releases or spills of hazardous materials in excess of the Reportable Quantity are reported by the Environmental Management Division to the National Response Center. Please note that any release of hazardous materials to the environment must be reported by the Environmental Management Division to State and/or local regulatory agencies.

5.4.1.3 Local emergency Response Plans for Releases of Hazardous Materials

a. ARC provides the LEPC or the local administering agency (Santa Clara County) with the following information necessary to revise local emergency response plans:

- (1) Routes used for transportation of hazardous substances.
- (2) Methods and procedures for notifying appropriate people and providing medical services to be followed in the event of a release.
- (3) Methods for determining the occurrence of a release and the areas most likely to be affected.
- (4) Emergency equipment available at the facility.
- (5) Descriptions of training programs for emergency response and medical personnel.
- (6) Notifications of releases following criteria set forth in 40 CFR 355.40.

5.4.2 Hazardous Materials Reporting

5.4.2.1 The Environmental Management Division annually submits the center-wide hazardous materials inventory to Santa Clara County’s reporting system, the California Environmental Reporting System (CERS) and provide the access to the ARC Fire Department. See Chapter 6, Hazardous Materials Management, for more information.

5.4.2.2 Hazardous material users annually submit to the Environmental Management Division and the Occupational Safety, Health and Medical Service Division updated inventories of hazardous materials kept or used onsite.

5.4.2.3 Tier one and tier two formats: ARC must annually submit hazardous materials inventories following EPCRA tier one and tier two formats to the LEPC or to the Santa Clara County Department of Environmental Health and to the local fire department. In California, the Hazardous Material Business Plan, required by Chapter 6.95 of the California Health and Safety Code, satisfies the EPCRA requirement.

5.4.2.4 The Environmental Management Division performs a threshold determination annually to determine if NASA ARC is required to report on the Toxics Release Inventory.

5.4.2.5 If TRI reporting is required, the Environmental Management Division reports to the US EPA using the Form R process.

5.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
Hazardous Materials Business Plan	Hazardous Material Program Manager	Delete Local Copies 6 yr. after report	CERS, Environmental Document Library (EDL), Local Server
Facility Response Plan	Hazardous Material Program Manager	Delete Local Copies 6 yr. after report	CERS, Environmental Document Library (EDL), Local Server
Hazardous Materials Inventory Statement	Hazardous Material Program Manager	Delete Local Copies 6 yr. after report	CERS, Environmental Document Library (EDL), Local Server
Hazardous Waste Contingency Plan	Dan Winningham	Delete Local Copies 6 yr. after report	Environmental Document Library (EDL), Local Server
Release Notifications	Hazardous Material Program Manager	Delete Local Copies 6 yr. after report	Environmental Document Library (EDL), Local Server
Spill Prevention, Control and	Water Compliance Program Manager	Delete Local Copies 6 yr. after report	Environmental Document Library (EDL), Local Server

Countermeasures Plan			
TRI Report	Hazardous Material Program Manager	Delete Local Copies 6 yr. after report	Environmental Document Library (EDL), Local Server

CHAPTER 6 HAZARDOUS MATERIALS MANAGEMENT

6.1 Applicable Documents

- a. APR 4101.1, Management of Large Shipping Containers and Contents.
- b. APR 8715.1, Chapter 24, Chemical Hazard Communication Program.
- c. California Health and Safety Code, Division 20, Chapter 6.95, §§ 25500 - 25547.8²⁸.
- d. Santa Clara County Hazardous Material Storage Ordinance, Santa Clara County Code of Ordinances, Title B, Division B11, Chapter XIII²⁹.
- e. Santa Clara County Toxic Gas Ordinance, Title B, Division B11, Chapter XIV³⁰.
- f. Uniform Fire Code and National Fire Protection Association Standards.
- g. Hazardous Materials Checklist, UN-023.³¹
- h. HMBP Property Owner Notification Letter (UN-053).³²
- i. NASA Ames Research Center Safety, Health and Environmental Training Catalog.³³

6.2 Personnel Training and Certification

6.2.1 All employees who use, handle, or store hazardous materials shall:

- a. Receive training in the safe use, handling, and proper storage methods specific to the materials and hazards associated with their normal work.
- b. Receive training on how to read and understand SDS, and how to respond to a hazardous materials spill.

6.2.2 Santa Clara County Hazardous Material Storage Ordinance requires all hazardous materials user training include the minimum Building Emergency Action Plan (ARC-004-06) & Hazardous Waste, Environmental Essentials and Spill Response (ARC-002-03). For specific training requirements and regulatory references, refer to training needs summary in the NASA Ames Research Center Safety, Health and Environmental Training Catalog.

6.2.3 Users shall retain training records and hazardous materials inspection records and make them available for inspection by the Environmental Management Division and Santa Clara County Regulators.

6.3 Responsibilities

6.3.1 Ames Civil Servants and Contractors Hazardous Materials Users shall:

²⁸https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=20.&title=&part=&chapter=6.95.&article=1

²⁹https://library.municode.com/CA/Santa_Clara_County/codes/Code_of_Ordinances?nodeId=TITBRE_DIVB11ENHE_CHXII_IHAMAST&showChanges=true

³⁰https://library.municode.com/ca/santa_clara_county/codes/code_of_ordinances?nodeId=TITBRE_DIVB11ENHE_CHXIVT_OGAST

³¹ UN-023: <http://www.unidocs.org/hazmat/inspections/checklists/un-023.pdf>

³² UN-053: <http://www.unidocs.org/hazmat/business-plan/un-053.doc>

³³ Health and Environmental Training Catalog: <https://q.arc.nasa.gov/content/training>

- a. Conduct operations in compliance with Santa Clara County Hazardous Material Storage Ordinance including required inspections and maintenance of inspection logs of use and storage areas, applicable monitoring records, and proper labeling. Previous inspection reports shall be available for inspection by Environmental Management Division upon request.
- b. Contact Occupational Safety, Health, and Medical Service Division to begin chemical review process before purchasing or bringing any new chemicals onto ARC grounds.
- c. Maintain and make available required records, as requested by the Environmental Management Division.
- d. Maintain current file of safety data sheets (SDS).
- e. Maintain accurate Hazardous Materials Inventories (HMIs), including above- and underground tanks, and all compressed gases.
- f. Update HMIs when new chemicals are obtained and when chemicals or storage areas are no longer used.
- g. Participate and provide input in order to complete plans and reports (e.g. Hazardous Materials Business Plans, Inventory updates, Toxic Gas Reports, Ozone Depleting Substances, etc.) on time.
- h. Provide access and point of contact for inspections, assessments, and audits by the Environmental Management Division and regulatory agencies.
- i. Implement corrective actions as required.
- j. Maintain training records, including non-ARC training that is relevant, and provide copies to the Environmental Management Division.
- k. Inform the Environmental Management Division of changes in operations that will affect storage and use of hazardous materials at least 45 days prior to changes.
- l. Maintain storage areas free of debris and rainwater and designate storage areas of either hazardous materials or hazardous wastes with posted emergency procedure signs and provide spill kits and spill logs.
- m. Report spills to Environmental Management Division and maintain spill log.
- n. Close hazardous materials storage areas or equipment no longer in use in coordination with the Environmental Management Division.

6.3.2 Resident Agencies, NASA Research Park Tenants, and Hazardous Materials Users shall:

- a. Follow Santa Clara County Hazardous Materials Storage Ordinance and correspond directly with the Santa Clara County, Hazardous Material Compliance Division (HMCD) to properly process any necessary permits. HMCD can be contacted at (408) 918-3400 or deh.hmcd@deh.sccgov.org.
- b. Following compliance correspondence with Santa Clara County, Hazardous Material Compliance Division (HMCD), supply the Environmental Management Division (Code JQ) with a HMBP Property Owner Notification Letter (UN-053).
- c. Maintain a current file of SDS.
- d. Maintain accurate HMIs, including above- and underground tanks, and all compressed gases.
- e. Submit and update HMBPs to the Santa Clara County and ARC Environmental Management Division.

- f. Update hazardous materials inventory when new chemicals are obtained and when storage areas are no longer used.
- g. Participate and provide input to Environmental Management Division in order to complete any required plans or records on time, including HMIs, closure plans, corrective action plans, etc.
- h. Provide access and point of contact for inspections, assessments, and audits by the Environmental Management Division and Santa Clara County Inspectors.
- i. Implement corrective actions as required.
- j. Inform the Environmental Management Division of changes in operations that affect storage and use of hazardous materials.
- k. Maintain storage areas free of debris and rainwater. Designate storage areas of either hazardous materials or hazardous wastes with posted emergency signs and provide designated spill kit.
- l. Maintain permits, pay fees, and maintain training records, spill log and inventory for a three-year period and make available to the ARC Environmental Management Division when requested.
- m. Close hazardous materials storage areas or equipment no longer in use in accordance with the Environmental Closure Requirements, Chapter 4.
- n. Report all spills releases to the Environmental Management Division immediately.

6.3.3 Environmental Management Division (EMD) shall:

- a. Provide direction for HMBP compliance.
- b. Provide hazardous materials and waste management training.
- c. Provide consultation, services, and support, including internal self-inspections.
- d. Submit the Hazardous Material Business Plans (HMBPs) and completed Closure Plans to the County for ARC Hazardous Materials Users.
- e. Collect and complete the chemical inventories submit the relevant HMIs to Santa Clara County and EPA for ARC Hazardous Materials Users.
- f. Report all releases to the appropriate regulatory agency as determined by the material, location and amount.
- g. Maintain permits, pay fees, and maintain records for a three-year period for ARC Hazardous Materials Users.
- h. Conduct closure for hazardous materials storage areas or equipment no longer in use for ARC Hazardous Materials Users.
- i. Conduct inspections of hazardous materials storage areas with County inspector and serve as liaison to the County.
- j. Submit design drawings to the county for new and re-modeled hazardous materials storage facilities, and coordinate on-site inspection with County and ARC Users.

6.3.4 Occupational Safety, Health, and Medical Service Division shall:

- a. Manage hazard communication program.

- b. Inform Environmental Management Division of any new hazardous materials storage areas.
- c. Maintain facility under threshold chemical inventories and provide to EMD when requested.

6.3.5 Line Management shall:

- a. Ensure compliance with hazardous materials regulations in their area of responsibility (including conducting inspections and maintaining inspection records).
- b. Ensure that sufficient resources are provided to achieve compliance with applicable regulations.
- c. Ensure that appropriate spill response materials and personal protective equipment are available to employees.
- d. Ensure that employees receive training required to handle hazardous materials.
- e. Coordinate with procurement to ensure that hazardous materials management contracts are properly administered and have the appropriate contract provisions contained within them.
- f. Coordinate with the Environmental Management Division for consultant services and support, as needed.

6.4 Requirements

6.4.1 General Requirements

6.4.1.1 Store all hazardous materials in accordance with Santa Clara County Hazardous Material Storage Ordinance, Santa Clara County Code of Ordinances, Title B, Division B11, Chapter XIII.

6.4.1.2 All compressed gas cylinders shall be:

- a. Secured with at least a single, but preferably two, non-combustible strap(s).
- b. Stored with the valve cover in place when not in use.
- c. Stored according to their chemical compatibility. See Toxic Gas Management Requirements, Chapter 16, for more information on storage of toxic gases.

6.4.1.3 Hazardous materials shall not be stored in locations where they may be exposed to conditions (heat, light, air, water, etc.) that are incompatible with the material, including large shipping containers in accordance with APR 4101.1.

6.4.1.4 To prevent hazardous materials from accidentally reaching the sanitary sewer, hazardous materials should not be stored above sinks, next to sinks or floor drains, or in fume hoods with open sink, unless secondarily contained.

6.4.1.5 All hazardous materials containers, lockers, cabinets, and piping shall be labeled.

6.4.1.6 Appropriate spill cleanup materials and personal protective equipment shall be available in areas of hazardous material storage and labeled or designated as a spill kit.

6.4.1.7 Hazardous materials storage areas and operations shall be inspected and deficiencies corrected as soon as feasible. Corrective actions should be noted on inspection form. Inspections shall be recorded using a form that includes all items applicable to the particular hazardous materials storage area. Hazardous Materials inspection forms shall be available for inspection by Environmental Management Division upon request.

6.4.1.8 Each hazardous material listed in the operation's hazardous materials inventory shall have an SDS available and be handled as described on the SDS. For additional information on SDS, refer to APR 8715.1, Chapter 24, Chemical Hazard Communication Program.

6.4.1.9 Each hazardous material used or present at any time during the year shall be included in the operation's HMIS, which must be kept current.

6.4.1.10 Releases shall be cleaned up immediately by trained personnel and documented on a spill log.

6.4.2 General Storage Requirements

6.4.2.1 Hazardous materials storage shall:

- a. Not be located near storm drains.
- b. Not be located on unpaved surfaces.
- c. Utilize containers that are compatible with the material stored and are free of defects.
- d. Be located in areas free of debris and rainwater.
- e. Be in areas that are labeled and secured.
- f. Have appropriate fire extinguishing equipment available and properly maintained.

6.4.3 Secondary Containment

6.4.3.1 Except for containers in use, all liquid hazardous materials shall be secondarily contained.

6.4.3.2 Secondary containment shall:

- a. Be kept dry and free of debris and defects.
- b. Be chemically compatible with the material(s) in storage.
- c. Be labeled to describe its contents and their hazards, if the secondary containment obscures identification of the containers inside.
- d. Be able to contain the following:
 - (1) 110 percent of a single container's volume.
 - (2) 10 percent of the aggregate volume of multiple containers or 150 percent of the largest container, whichever is greater.
 - (3) A 20- minute fire sprinkler release, if open to such a system.
 - (4) 4.5 inches of rainfall if the storage system is open to rainfall.

6.4.4 Segregation

6.4.4.1 All hazardous materials shall be segregated according to hazard class and compatibility to prevent hazardous reactions that result from inadvertent or accidental mixing of chemically incompatible materials. Segregation is the separation of materials through isolation or physical barriers.

Note: Examples of hazard classes that should be stored separately include corrosive acids, corrosive bases, oxidizers (peroxides), poisons, explosives, flammables, and reactive materials. For reportable quantities and threshold planning quantity, reference Title 40 CFR Chapter I Subchapter J Part 355 Subpart D Appendix A: The List of

Extremely Hazardous Substances and Their Threshold Planning Quantities at
https://www.ecfr.gov/cgi-bin/text-idx?SID=2b4d2d375e73ebc5c93d8b2fe632cb6f&mc=true&node=pt40.28.355&rgn=div5#ap40.30.355_161.a

6.4.4.2 Incompatibility may occur between chemicals (e.g. sodium metal and water or chlorine and ammonia) or between chemicals and their containers (e.g. sulfuric acid and a metal container).

6.4.4.3 Hazardous material and hazardous waste must be stored in separate secondary containments.

6.4.5 Labeling

6.4.5.1 All hazardous materials containers, including day-use or bench-top containers, cabinets, and associated piping shall be labeled to indicate their contents.

6.4.5.2 Pipes shall be labeled with contents at 20-foot intervals.

6.4.5.3 Labels must indicate the name of the material spelled out in English and any hazards associated with it (e.g., “ACETONE”-“FLAMMABLE”). The chemical formula alone is not sufficient.

6.4.5.4 Labels shall meet the hazard communication requirements in Ames Health and Safety Procedural Requirements–Chemical Hazard Communication Program APR 8715.1, Chapter 24.

6.4.5.5 In the case of a container of an unknown substance (e.g. unlabeled chemicals inherited when staff move into a space), it is the responsibility of the current facility owner to identify the substance and properly manage the chemical. If testing is required it is the obligation of the facility owner to conduct the sampling. Once the chemical(s) have been identified, assure the containers are compatible and properly labeled. Contact the Environmental Management Division for specific guidance on identifying and managing unknown chemicals.

6.4.5.6 Individuals may label their own containers, as long as the label meets requirements, is durable and legible, and letters are large enough to be visible from a distance of approximately six feet, except for small containers (less than five gallons).

6.4.5.7 Uniform marking guidelines for hazardous materials and hazardous waste have been developed by the Santa Clara County Manufacturing Group and have been adopted by Santa Clara County. These guidelines (UN-016) are included as can be found at <https://www.sccgov.org/sites/hazmat/Documents/hmcd-021.pdf>.

6.4.6 Spill Cleanup, Fire Protection, and Personal Protective Equipment

6.4.6.1 Wherever hazardous materials are used or stored, appropriate spill response equipment and fire protection equipment shall be available. For example, a laboratory using acids requires an acid compatible spill kit, with acid-resistant gloves and a fire extinguisher for corrosives. In a shop where oil is used or stored, absorbent brooms and floor-dry and sturdy chemical-resistant gloves are required. Locations of hazardous material storage and spill response equipment are indicated on the facility Hazardous Materials storage map.

6.4.6.2 Hazardous materials spills shall be cleaned up only by personnel familiar with the hazards of the material and trained in chemical emergency response. Any spill of an extremely or acutely hazardous material, or any spill large enough to take more than 1 hour to clean up, should be reported to the Environmental Management Division and ARC Dispatch should be contacted by dialing 911.

6.4.7 Inspections

6.4.7.1 All hazardous materials storage areas shall be inspected monthly, with inspection records documented and maintained on-site.

6.4.7.2 Hazardous materials inspections shall include, all elements listed in form UN-023, (<http://www.unidocs.org/hazmat/inspections/checklists/un-023.pdf>):

Note: This inspection can be combined with other safety or facility inspections.

6.4.8 SDS Usage

6.4.8.1 SDS shall be available at hazardous material locations..

Note: SDS are the basis for several different health, safety, and environmental regulatory compliance requirements. They are intended to be a useful source of information about handling, storage, disposal, and emergency protocol for each hazardous material present. SDS are discussed in APR 8715.1, Chapter 24.

6.4.9 Inventory Reporting

6.4.9.1 All hazardous materials in use at any time during the year shall be included in the operation's inventory of hazardous materials.

6.4.9.2 Annually, the Environmental Management Division shall compile and update the Center's inventory and report it to the Santa Clara County Health Department, Hazardous Materials Compliance Division.

Note: This information is the basis for ARC's hazardous materials storage permits and fees. The information in the inventory is also used to satisfy numerous other regulatory requirements

6.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
Hazardous Materials Storage Permits	Hazardous Materials Specialist, EMD	Destroy after second reissuance of the permit or 10 years after permit expires or is cancelled.	All chemical storage locations
Monitoring Records	Inventory Holder	Update annually, Keep records for 3 years	All chemical storage locations
Monitoring Record-Asbestos and radioactive and hazardous material inspection, monitoring, and corrective actions	Inventory Holder	Cut off annually, destroy with concurrence of Center or NASA Counsel's Office 75 years after cutoff or when no longer needed, whichever is later.	All chemical storage locations
HMI Records	Inventory Holder and Occupational Safety, Health, and Medical Service Division, EMD	Destroy after second periodic update of master list.	Chemical storage locations and HMBP

6.6 Reports

Hazardous Materials Management				
Frequency:	Annual	Reported To:	Santa Clara County Environmental Health Department	
FY or CY Data	CY	Required By:	Title 42, Section 11022	
Report Due:	Annually		California Health and Safety Code, Chapter 6.95 Section 25505(d)	
Internally Report To:	Hazardous Materials Program Manager, EMD		Santa Clara County Hazardous Materials Storage Ordinance Division B11, Chapter XIII	
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
<i>Chemicals Users</i>	Various contacts based on HMIs data or other information	Hazardous Materials Program Manager, EMD	Chemical data for stored chemicals	Type and quantities (lb, gal.) of chemicals used in a calendar year

CHAPTER 7 HAZARDOUS WASTE MANAGEMENT

7.1 Applicable Documents and Forms

- a. ARC Form 749, Chemical Material/Waste Pick-Up and Container Deliver Request
- b. Hazardous Waste Storage Area Inspection Checklist, UN-023.³⁴
- c. Environmental Standards for the Management of Hazardous Waste 22 CCR Division 4.5³⁵.
- d. California Health and Safety Code (HSC), Division 20, Chapter 6.5 and 6.11³⁶.
- e. Environmental Health Standards for the Management of Hazardous Waste, 22 CCR § 66260-66268³⁷

7.2 Personnel Training and Certification

7.2.1 Any person generating or handling hazardous waste shall:

- a. Complete training covering the basic requirements of hazardous waste management as required by 22 CCR 66260-66268.

Note: The course “Hazardous Waste, Environmental Essentials and Spill Response” provided by the Environmental Management Division or equivalent satisfies this requirement.

- b. Complete annual refresher either in person or by taking the online SATERN refresher course (ARC-002-03).
- c. Complete the training course “Hazardous Waste, Environmental Essentials and Spill Response” within 3 months of being assigned hazardous waste management responsibilities.

7.3 Responsibilities

7.3.1 **Environmental Management Division** shall:

- a. Sign all manifests required for off-site transportation and disposal of hazardous wastes. Only personnel who have been approved by the EMD Hazardous Waste Specialist may sign manifests.
- b. Provide containers and labels to generators upon request.
- c. Sample and analyze hazardous waste as required by disposal facility. Use analytical results and other information to profile waste streams generated.
- d. Prepare and maintain copies of manifests, biennial reports, exception reports, and hazardous waste characterization records.
- e. Provide trained staff to pick up, consolidate, and prepare waste for transport.

³⁴ UN-023: <http://www.unidocs.org/hazmat/aboveground/un-023.pdf>

³⁵ <https://dtsc.ca.gov/title22/>

³⁶ http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=20.&title=&part=&chapter=6.11.&article

³⁷ [https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I77C6B3D0D4BA11DE8879F88E8B0DAAAE&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I77C6B3D0D4BA11DE8879F88E8B0DAAAE&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))

- f. Coordinate on-site pick-up of hazardous waste.
- g. Arrange off-site transportation, treatment, recycling and/or disposal of routinely generated hazardous wastes.
- h. Manage ARC Hazardous Waste Storage Building and any other additional EMD managed Hazardous Waste storage areas.
- i. Manage Ames Chemical Exchange (ACE) located at N239A.
- j. Serve as technical point-of-contact for all regulatory agency interface and correspondence, including inspections.
- k. Prepare and maintain EMD-specific contingency plans and amend contingency plan every three years or whenever:
 - (1) Applicable regulations are revised or changed.
 - (2) Plan fails in an emergency.
 - (3) Facility changes in ways which would affect hazards and/or response.
 - (4) Changes occur in the list of site emergency coordinators and/or equipment.
- l. Prepare and maintain generic site-specific contingency plans and amend contingency plans.
- m. Prepare and maintain site and location-specific contingency plans template and provide assistance to 90-day hazardous waste storage areas during completion and amending process.
- n. Provide initial and annual refresher hazardous waste management training to generators.
- o. Verify that hazardous waste generators have current hazardous waste training prior to pickup of the hazardous waste.
- p. Designate Satellite Accumulation Areas (SAA) and prepare SAA permit for posting in waste generation area.
- q. Submit a CRT Material Handling Report annually to DTSC by February 1 if more than 5,000 kg of CRTs (~200 CRTs) are generated.

7.3.2 Supervisors of personnel who generate hazardous waste shall:

- a. Ensure that annual refresher training is completed.
- b. Complete training questionnaires annually, and review with each employee, to identify training requirements related to hazardous waste management.
- c. Ensure all appropriate resources are available for hazardous waste management.
- d. Ensure all internal & external findings, inspections, audits, surveys are addressed in a timely manner.
- e. Implement corrective actions.
- f. Inform the Environmental Management Division of changes in operations affecting storage and use of PCBs.
- g. Assign a designated person self-monitoring inspections of Hazardous Waste storage area. The self monitoring inspections shall include all aspects listed in UN-023.

- h. Prepare and maintain 90-day facility-specific contingency plans and amend contingency plans, in accordance with CCR Title 22, Division 4.5, every three years or whenever:
- (1) Notified by EMD of changes to hazardous waste storage requirements that affect the organizations contingency plans.
 - (2) Plan fails in an emergency.
 - (3) Facility changes in ways which would affect hazards and/or response.
 - (4) Changes occur in the list of site emergency coordinators and/or equipment.
- i. Promptly report spills, leaks, or other releases of hazardous materials or waste and PCBs to the Environmental Management Division.

7.3.3 Personnel who generate hazardous waste shall:

- a. Manage hazardous wastes in accordance with Section 5 - Requirements.
- b. Notify the Environmental Management Division or designated contractor of the location of hazardous waste accumulation areas.
- c. Notify the Environmental Management Division or designated contractor of new hazardous waste streams or changes in existing hazardous waste streams or processes generating the waste.
- d. Properly manage hazardous waste in compliance with this chapter; use correct containers compatible with the waste and segregate by hazard classes.
- e. Label all containers and accumulation areas with appropriate labels and signs to comply with hazardous waste accumulation standards including satellite and 90-day waste accumulation requirements listed in 22 CCR 66262.34. Contact the Environmental Management Division for assistance.
- f. Inspect 90-day hazardous waste generation areas weekly and satellite accumulation areas at least monthly, fill out the Form UN-023, and retain in accordance with the Records section of this Chapter. Maintain inspection records for three years.
- g. Accurately complete Form A (ARC-749), Chemical Material/Waste Pick-up and Container Delivery Request, and submit to the Environmental Management Division or designees prior to required pick-up or delivery date.
- h. Contact the Environmental Management Division prior to treating waste on-site.

Note: Unpermitted treatment of any hazardous waste is illegal. Obtaining a State-issued permit for hazardous waste treatment must be done by the Environmental Management Division (Division 20, Chapter 6.5 and 6.11).

- i. Ensure that hazardous waste accumulation areas are accessible for inspection by the Environmental Management Division and regulatory agencies (Title 22, Division 4.5).
- j. Ensure hazardous waste manifests are signed by an authorized representative of the Environmental Management Division.
- k. Implement waste minimization requirements such as materials substitution, process changes or recycling. For more information, refer to Chapter 15, Sustainability.

- l. Prevent the disposal of hazardous waste, including first rinseate from empty hazardous waste or hazardous materials containers, into the sanitary sewer.

Note: Pouring hazardous waste down the sink is prohibited by law. This prohibition also applies to disposal of first rinseate from empty hazardous waste or hazardous materials containers. Such rinseate is collected and managed as hazardous waste.

- m. Read and be familiar with the facility specific hazardous waste contingency plan.
- n. Immediately notify the Environmental Management Division whenever hazardous materials or hazardous wastes are spilled outside of secondary containment or are released into the environment.
- o. Be familiar with the following:
 - (1) The location of spill control equipment and supplies (e.g. absorbent).
 - (2) Hazard classes of materials stored in each area for which they are responsible.
 - (3) Potential spill routes in hazardous waste accumulation areas including location of drainage ditches, storm drains and sanitary sewer drains.
- p. Attempt to contain spilled or leaking materials if the action will not endanger employee health and safety. If deemed safe, the generator shall secure container or source of spill (i.e., upright container, plug container, dike around container/spill, dike off floor or storm drains and/or any other routes to the environment, and cordon off the area). Any spill of an extremely or acutely hazardous waste, or any spill large enough to take more than one hour to clean up shall be reported to the Environmental Management Division. Call ARC Protective Services Dispatch office (911) if help is required to contain spill or if spill occurs during off-hours.
- q. Call ARC Protective Services Dispatch Office (dial 9-1-1 from an ARC phone) if help is required to contain spill or if spill occurs during off-hours.
- r. Call the Environmental Management Division to report spills that are under control and occur during normal working hours.
- s. Record spill event details in generator spill log and maintain the log in accordance with the Records section of this Chapter.

7.3.4 Logistics and Documentation Services Division shall:

- a. Collect and stage NASA owned electronic waste (computers, monitors, printers etc.) in secure, protected locations to prevent release of materials to the environment.
- b. Label all electronic waste or the area used to store electronic waste in accordance with this chapter.
- c. Prepare shipments of electronic waste.
- d. Track shipments by keeping record of all electronic waste shipped to recycling facility, including shipment date, facility name, types and quantities in pounds of electronic wastes. Maintain file of all shipments of electronic waste for three years
- e. Provide electronic waste shipment record to the Environmental Management Division annually each calendar year (CY).

7.4 Requirements

7.4.1 Waste Identification

7.4.1.1 The generator, with assistance from the Environmental Management Division, shall identify the waste using the criteria described in this subsection. Wastes may be regulated as hazardous wastes either because of their characteristics (Characteristic Waste) or because of their listings (Listed Waste).

7.4.1.2 Characteristic wastes are defined in subpart c of 40 CFR §§ 261.21 - 24 and 22 CCR §§ 66261.10 - 30.

- (1) Ignitable
- (2) Corrosive
- (3) Toxic
- (4) Reactive

7.4.1.3 Listed wastes are hazardous wastes included in the US Environmental Protection Agency (EPA) lists (Subpart D - lists of hazardous waste, 40 CFR §§ 261.30 - 33).

7.4.1.4 When in doubt, the generator shall request the assistance of the Environmental Management Division to determine if the waste is hazardous.

7.4.2 Segregation and Compatibility

- a. Segregate hazardous waste according to hazard class for safety and to minimize disposal cost.
- b. Separate hazardous waste from non-hazardous waste.
- c. Segregate flammable waste solvents (acetone, alcohol, etc.) from halogenated (containing chlorine, fluorine, bromine, or iodine) solvents. Hydrocarbon solvents can be recycled or incinerated if they are not contaminated with halides.
- d. Keep used oil free of contamination by halogenated solvents. Do not mix electrical insulating oils with other oils, chlorinated solvents, or water. Used oil can be recycled if it is not contaminated.
- e. Keep acids and acid plating solutions away from cyanides.
- f. Keep acids and caustics free of contamination with heavy metals and beryllium, if possible. Contaminated acid and caustic waste solutions must also be segregated.
- g. Keep waste halogenated solvents free of non-halogenated hydrocarbon solvents. Large volumes of each group can be redistilled and recycled individually.

7.4.3 Waste Labeling

- a. Generators shall label each hazardous waste container with a yellow "Hazardous Waste Accumulation Log" label (see Appendix C.1).
- b. The minimum information required on the yellow hazardous waste accumulation label is as follows:
 - (1) Accumulation start date.
 - (2) Composition and physical state of waste.
 - (3) Warning words indicating the hazardous properties of waste (e.g., flammable, reactive, etc.).
 - (4) Generator's name and point of generation of the waste.

7.4.4 Waste Accumulation Areas (90-Day Accumulation Areas)

- a. Hazardous waste accumulation time is limited to 90-days on site except when an area is designated in writing by the Environmental Management Division as a satellite accumulation area.
- b. Containers limited to 90-days on site shall be scheduled for pick-up and management at N265 within 50 days of accumulation start date.
- c. Containers of reactive or ignitable waste shall be stored a minimum of 50 feet from property line.
- d. Incompatible wastes shall be separated by dike, berm, wall, tray or other device.

7.4.5 Satellite Accumulation Area (SAA)

- a. The waste shall be stored at or near the point of its generation (that is, in the same or adjacent room or work area).
- b. Secondary containment is required for all hazardous waste.
- c. The waste shall be under the control of the person(s) generating the waste.
- d. The location of each SAA shall be clearly identified by posting with a signed permit issued by Environmental Management Division.
- e. No more than 55 gallons of hazardous or 1 quart of an extremely hazardous or acutely hazardous waste of compatible hazard classes shall be stored at each SAA any one time. If not all waste streams generated by a single process or group of processes in the same area are compatible, a separate 55-gallon or 1 quart limit applies to each group of compatible waste streams.
- f. Prior to reaching the quantity limit, the generator shall submit an ARC 749, Form A.
- g. The EMD hazardous waste support service contractor shall move the waste to a 90-day accumulation area within 3 days after the ARC 749 is submitted.
- h. In no case shall waste be stored for over 9 months (270 days) at a SAA.
- i. The EMD must dispose of hazardous waste within one year from the initial date of generation.
- j. Containers of reactive or ignitable waste shall be stored a minimum of 50 feet from property line.
- k. Incompatible wastes shall be separated by dike, berm, wall, tray or other device.

7.4.6 Inspection

7.4.6.1 90-Day Accumulation Areas shall be inspected weekly for leaking/deteriorating containers or containment systems. The Hazardous Waste Storage Area Inspection Checklist or equivalent form must be completed weekly.

7.4.6.2 Satellite Accumulation Areas shall be inspected at least monthly and documented on the Hazardous Waste Storage Area Inspection Checklist, UN-023 or equivalent form.

7.4.7 Waste Container Handling

7.4.7.1 Containers shall be closed unless waste is being added or removed.

7.4.7.2 Containers shall not be opened/handled/stored in a manner which may rupture it or cause it to leak.

7.4.7.3 Waste shall not be placed in an unwashed container which previously held an incompatible waste.

7.4.7.4 Containers shall be repacked if not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak.

7.4.8 Empty Container Management

7.4.8.1 The procedure and requirements for site-wide management of empty containers are summarized in the Empty Container Decision Tree process flow diagram included in Appendix C.1. Empty container is defined in Appendix A and an example of an empty container label is provided in Appendix C.1. Contact the Environmental Management Division for help, if needed, regarding proper and safe management of empty containers.

7.4.8.2 These containers are generated in the following ways:

- a. When an ARC hazardous materials user has used the entire volume of a container's contents.
- b. When ARC generators classify any container as "empty" on the Form ARC 749.
- c. As a result of emptying during waste bulking or consolidation activities at N265.

7.4.8.3 Empty containers are managed according to the requirements of 40 CFR part 261.7, Title 22 CCR part 66261.7 and 49 CFR part 173, which include the following:

- a. Disposing of <5-gallon empty containers in NASA solid waste bins which are subsequently disposed of at an approved solid waste facility.
- b. Recycling the empty container or inner liner at an offsite facility where it can be reclaimed for its scrap value.
- c. Offsite reconditioning or remanufacturing of the container or inner liner in accordance with 49 CFR part 173.28.
- d. Returning the container or inner liner to the manufacturer (e.g. empty gas cylinders).

7.4.9 Universal Waste

7.4.9.1 Universal waste, as specified in Appendix A, is a subset of hazardous waste and is managed according to 40 CFR part 273, 22 CCR 66261.9, and 22 CCR 66273.

7.4.9.2 Universal waste may be accumulated on-site for up to 1 year. Containers shall be scheduled for pickup from accumulation areas when the container becomes full but no longer than 9 months from the accumulation start date.

7.4.9.3 Waste items shall be placed in containers, boxes, or on pallets to prevent breakage and release of hazardous constituents.

7.4.9.4 Broken batteries and glass fluorescent light tubes shall be managed as hazardous waste.

7.4.9.5 There are no requirements for inspections of Universal waste accumulations areas. It is recommended that the generators inspect the area monthly using the Hazardous Waste Storage Area Inspection Checklist.

7.4.9.6 ARC currently has a number of locations where various types of batteries can be collected and recycled properly. For a list of current battery collection locations, call the hazardous waste collection group.

7.4.9.7 Other Universal waste can be picked up by completing a Form ARC-749.

7.4.9.8 Generators shall label containers or pallets of Universal waste with a purple “Universal Waste” label. However, generators may label the Universal waste accumulation area, with clearly marked boundaries, instead of labeling each container or pallet.

7.4.9.9 The minimum information required on the purple Universal waste label include:

- a. Contents (e.g. batteries, cathode ray tube device, electronic device, lamps); and
- b. Accumulation start date.

7.4.10 Electronic Waste

7.4.10.1 Recycling

a. ARC shall send all electronic waste to a recycling facility approved by Environmental Management Division.

7.4.10.2 On-Site Management

- a. Electronic waste shall be stored in a secure, protected location to prevent release of materials to the environment.
- b. Broken glass from cathode ray tubes (e.g. computer monitors) shall be managed as hazardous waste.
- c. Electronic waste or the area used to store electronic waste shall be labeled as follows:
 - (1) Cathode Ray Tube (CRT) devices: mark with the words “Universal Waste – CRT device” and the accumulation start date.
 - (2) All other electronic waste: mark with the words “Universal Waste – Electronic device” and the accumulation start date.

7.4.11 Waste Pickup and Container Delivery Requests

7.4.11.1 Complete Form ARC 749. Instructions for completion are provided on back of form. Forward or fax the completed form to address on top of Form ARC 749.

7.4.11.2 For pick-up requests, generator must sign and date the certification statement.

7.4.11.3 Generator must prepare containers as follows prior to pick-up:

- a. Securely close container.
- b. Remove residual of chemicals/rainwater on outside of container.

7.4.12 Control and Management of Spills

7.4.12.1 The generator shall take measures to prevent and control spills, including:

- a. Containers shall be stored where spills will not enter drains or sinks. For example, do not store chemical containers on shelves above sinks.
- b. The generator shall keep spill control equipment (e.g., spill pads, absorbent pigs, "kitty litter" absorbent, drain plugs) in or near storage areas.

7.4.13 Preparedness and Prevention

7.4.13.1 Generators shall maintain hazardous waste accumulation areas in a safe manner, to minimize possibility of fire, explosion or release and to protect human health and the environment.

7.4.13.2 Generators shall ensure the following emergency equipment is supplied, tested, and maintained as required by quantity and material stored (see material SDS or EMD for guidance):

- a. Internal communication or alarm to provide emergency notification to facility personnel.
- b. Telephone or two-way radio capable of summoning outside emergency assistance.
- c. Fire extinguishers, fire control equipment, spill control equipment and decontamination equipment.
- d. Water, foam or automatic sprinkler system with adequate water volume and pressure.
- e. Eyewash.
- f. Safety Shower
- g. Personal protective equipment.

7.4.13.3 Aisle space shall be provided to allow access to waste containers and emergency equipment.

7.4.14 Waste Minimization

7.4.14.1 Generators shall identify and practice methods that reduce the amount of waste generated, treated, stored, or disposed.

7.4.14.2 Generators shall employ source reduction and recycling practices, to the extent feasible, to ensure that the least amount of waste is generated from their daily operations. Details on waste minimization techniques are discussed in the Sustainability Chapter of this APR.

7.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
Hazardous Waste Activity Monthly Report	EMD Hazardous Waste lead	3 years minimum	EMD Files, Environmental Document Library
Hazardous Waste Generation Report (to NETS)	EMD Hazardous Waste lead	N/A	NETS
DTSC Verification Questionnaire statements	EMD Hazardous Waste lead	5 years minimum	EMD Files.
Hazardous Waste Contingency Plans (part of BEAP)	EMD Hazardous Waste lead	5 years minimum	EMD Files, Environmental

			Document Library
California State Board of Equalization (BOE) hazardous waste generator fee return	EMD Hazardous Waste lead	5 years minimum	EMD Files.
Hazardous Waste Source Reduction Act (SB14) Plan	EMD Hazardous Waste lead	8 years minimum	EMD Files Environmental Document Library
Hazardous Waste Biennial Report	EMD Hazardous Waste lead	6 years minimum	EMD Files, 4D Document System
Hazardous Waste Characterization Report	EMD Hazardous Waste lead	5 years minimum	EMD Files, Environmental Document Library
CRT Handler Report	EMD Sustainability Lead	Delete Local Copies 6 yr. after report	EMD Files, Network Server, Environmental Document Library

7.6 Reports

Hazardous Waste Activity Monthly Report				
Frequency:	Monthly	Reported To:	Internal Report	
FY or CY Data	Calendar Month	Required By:	N/A	
Report Due:	Monthly by 5 th working day			
Internally Report To:	Dan Winningham			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
EMD	Hazardous Waste Lead, EMD	Hazardous Waste Lead EMD	Pickup activities	Pounds
EMD	Hazardous Waste Lead, JQ	Hazardous Waste Lead, JQ	Disposal activities	Pounds
EMD	Hazardous Waste Lead, EMD	Hazardous Waste Lead, EMD	RA Disposal Costs	Dollars

Hazardous Waste Generation Report				
Frequency:	Annual	Reported To:	NASA Environmental Tracking System (NETS)	
FY or CY Data	CY	Required By:	NASA Headquarter	
Report Due:	Varies			
Internally Report To:	Hazardous Waste Lead			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units

EMD	Hazardous Waste Lead, EMD	Hazardous Waste Lead, EMD	RCRA Hazardous Waste Generation Data	Pounds
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DTSC Verification Questionnaire Statement				
Frequency:	Annual	Reported To:	DTSC	
FY or CY Data	CY	Required By:	DTSC	
Report Due:	30 days from date of receipt			
Internally Report To:	Hazardous Waste Lead, EMD			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
EMD	Hazardous Waste Lead, EMD	Hazardous Waste Lead, EMD	Hazardous Waste Manifests Generation Data	Number of manifests generated.

Hazardous Waste Contingency Plans				
Frequency:	3 years	Reported To:	Internal	
FY or CY Data	CY	Required By:	DTSC	
Report Due:	Every three years			
Internally Report To:	Hazardous Waste Lead, EMD			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
EMD	Hazardous Waste Lead, EMD	Hazardous Waste Lead, EMD	Emergency Information	Varies
JP	Fire Department	Fire Department	Emergency Preparedness Information	Varies

California State Board of Equalization (BOE) Hazardous Waste Fee Return				
Frequency:	Annual	Reported To:	BOE	
FY or CY Data	CY	Required By:	BOE	
Report Due:	2/28 (Final payment) and 8/30 (prepayment)			
Internally Report To:	Hazardous Waste Lead, EMD			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
EMD	Hazardous Waste Lead, EMD	Hazardous Waste Lead, JQ	Hazardous Waste Generation Data	Tons

Hazardous Waste Source Reduction Act (SB14) Plan				
Frequency:	Every 4 years	Reported To:	DTSC	
FY or CY Data	CY	Required By:	DTSC	
Report Due:	9/1			
Internally Report To:	Hazardous Waste Lead, EMD			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
EMD	Hazardous Waste Lead, EMD	Hazardous Waste Lead, EMD	Hazardous Waste Generation Data	Pounds, Tons
Varies	Varies	Varies	Hazardous Waste Source Reduction Data	Pounds, Tons

Hazardous Waste Biennial Report				
Frequency:	Every 2 years	Reported To:	DTSC	
FY or CY Data	CY	Required By:	DTSC	
Report Due:	2/28 every even year			
Internally Report To:	Hazardous Waste Lead, EMD			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
EMD	Hazardous Waste Lead, EMD	Hazardous Waste Lead, EMD	RCRA Hazardous Waste Generation Data	Pounds, Tons

Hazardous Waste Characterization Report				
Frequency:	Varies	Reported To:	Internal	
FY or CY Data	N/A	Required By:	Internal	
Report Due:	Varies			
Internally Report To:	1. Hazardous Waste Lead, EMD			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
EMD	Hazardous Waste Lead, EMD	Hazardous Waste Lead, EMD	Waste Analyticals	Varies

CRT Handler Report				
Frequency:	Annual	Reported To:	DTSC	
FY or CY Data	N/A	Required By:	DTSC	
Report Due:	2/1 when over 11,000 lbs. of CRTs previous year			
Internally Report To:	Hazardous Waste Lead, EMD			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
EMD	Hazardous Waste Lead, EMD	Hazardous Waste Lead, EMD	CRT recycling information	Pounds

CHAPTER 8 INDUSTRIAL WASTEWATER MANAGEMENT PLAN

8.1 Applicable Documents and Forms

- a. NASA-Ames Wastewater Discharge Requirements contained in the permit issued by the City of Sunnyvale Water Pollution Control Plant (WPCP) (dated August 19, 2020, or most current permit).
- b. NASA-Ames Wastewater Discharge Requirements contained in the permit #17101 issued by the City of Palo Alto Regional Water Quality Control Plant (RWQCP) (dated July 21, 2017, or most recent version).
- c. Statewide General Waste Discharge Requirements for Sanitary Sewer Systems State Water Resources Control Board (SWRCB) Order No. 2006-0003-DWQ³⁸
- d. Palo Alto Sewer Use Ordinance, Chapter 16.09³⁹
- e. Wastewater Discharge Permit Requirement, Sunnyvale Municipal Code Section 12.12.180⁴⁰.
- f. Request for Incidental Sewer Discharge (Request for ISD) Form.⁴¹

8.2 Personnel Training and Certification

8.2.1 For specific training requirements and regulatory references, refer to training needs summary in NASA Ames Research Center Safety, Health and Environmental Training Catalog. Class schedule information is available at <https://q.arc.nasa.gov/content/training>.

8.2.2 Staff shall be familiar with discharge process and restrictions to local Publicly Owned Treatment Works (POTW).

8.2.3 All staff discharging water into the industrial wastewater system shall complete sewer discharge training via SATERN course ARC-001-10: Industrial Wastewater Sewer Discharge Training.

8.3 Responsibility

8.3.1 **Environmental Management Division (Code JC)** shall:

- a. Prepare and distribute environmental requirements for industrial wastewater management at Ames.
- b. Prepare and renew discharge permits with the City of Palo Alto and the City of Sunnyvale, as outlined in in this chapter.
- c. Obtain approval for discharge of incidental industrial wastewaters to the sanitary sewer system.
- d. Monitor and report as required under each sanitary sewer permit.
- e. Serve as the Designated Authorized Representative for regulatory reports.

8.3.2 **Plant Engineering Branch (Code JCM)** shall:

- a. Maintain sewer system in accordance with the City of Palo Alto and City of Sunnyvale Discharge permits.

³⁸ https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf

³⁹ <https://www.cityofpaloalto.org/civicax/filebank/documents/29369>

⁴⁰ http://qcode.us/codes/sunnyvale/?view=desktop&topic=12-12_12

⁴¹ Request for ISD Form: <https://environment.arc.nasa.gov/forms.html>

- b. With technical assistance from Environmental Management Division, develop and implement a Sanitary Sewer Overflow Program in accordance with SWRCB Order No. 2006-0003-DWQ.
- c. Store wastewater collected from boiler and cooler maintenance projects at N250B. Call the Environmental Management Division for further sampling analysis to determine if the containerized industrial wastewaters are sewerable to local POTW.
- d. Record and submit a Request for ISD Form permit application to the Environmental Division for N250B.
- e. Maintain and read flow meters and provide data to the Environmental Management Division monthly or when requested.
- f. Maintain and calibrate flow meter as indicated in the City of Palo Alto discharge permit.
- g. Contact Environmental Management Division to obtain Incidental Sewer Discharge (ISD) approvals for discharge of industrial wastewater when necessary (e.g., wastewater generated from cooling tower preventative maintenance (PM), boiler PM, etc.).
- h. Develop and implement the Fats, Oils, and Grease Control Program.
- i. Maintain oil water separators and grease control devices in accordance with City of Palo Alto and City of Sunnyvale Municipal Ordinances.

8.3.3 Generators of Industrial Wastewater shall:

- a. Notify the Environmental Management Division EMD during the planning or design of new or modified equipment or processes that will discharge to the sanitary sewer. City approval of the design may be required. The city may require installation of specific sampling ports or flow meters.
- b. Conduct operations POTW industrial sewer discharge permits to the sanitary sewer system.
- c. Ensure that the following wastes do not enter the sanitary system as required by the wastewater discharge permits:
 - (1) Wastes that may, either directly or indirectly by interaction with other substances:
 - (a) Cause a fire or explosion.
 - (b) Damage the city's wastewater collection, treatment, or disposal facilities.
 - (c) Obstruct flow in a sewer system or otherwise interfere with, inhibit, or disrupt the city's plant processes or operations.
 - (d) Result in the plant's generation of sludge that does not meet applicable requirements.
 - (e) Prevent city wastewater treatment plant's effluent from attaining water reclamation or discharge standards.
 - (2) Sand, cement, cinders, ashes, metal, glass, or other heavy solids; straw, shavings, animal hair, feathers, or other fibrous matter; tar, asphalt, resins, plastics, or other viscous substances.
 - (3) Wastewaters containing constituents at concentrations in excess of the established permit limits.
 - (4) Radioactive wastes.
 - (5) Hazardous wastes, including, but not limited to, organic solvents, pesticides and pesticide mixtures, oils and lubricating fluids, and corrosive materials.

- (6) Diluting waters (as defined in Appendix A Definitions).
- d. Label all containerized industrial wastewater. Labels shall include:
 - (1) Source of the wastewater.
 - (2) Generator name, company (if contractor), organization code, and phone number.
 - (3) Accumulation start date.
 - (4) Suspected constituents.
- e. Contact the Environmental Management Division representative to obtain approval prior to the discharge of incidental industrial wastewater into the sanitary sewer system.
- f. Remove all sediments and sludge from industrial wastewaters prior to discharge, as outlined in this Chapter.
- g. Keep records of all industrial wastewater discharges.

8.3.4 **Construction Managers** shall:

- a. Manage job sites to prevent discharges of liquid and solid substances to the sanitary sewer and storm drain systems, including systematic inspections of the job site to ensure that construction, demolition, and excavation materials (liquid or solid) are not entering sanitary or storm drain systems.
- b. Submit a Request for ISD Form and receive authorization from the Environmental Management Division before discharging water generated from construction activities into the sanitary system.
- c. Plug or block drains, especially along street gutters if necessary, when working with wet concrete or cutting waters. These substances are not permitted to enter storm or sanitary sewer drains.
- d. Place residual concrete/asphalt cutting effluent that remains in equipment in the bermed area and allow to evaporate. The dry residue can then be removed and discarded as solid waste. Do not discharge these waters or residues to the sanitary or storm systems.
- e. Manage tanks and Containers as follows:
 - (1) If large amounts of wastewater will be generated, arrange to store the water in tanks to allow for sampling and analysis prior to discharge.
 - (2) Label containers and/or tanks of wastewater as "wastewater pending analysis" and include the following:
 - (a) contact name;
 - (b) phone number;
 - (c) description of water source;
 - (d) suspected contaminants; and
 - (e) date.
 - (3) Filter or otherwise capture during discharge, as required in this Chapter, soils, sediments, and other particulates that settled out of the water onto the tank bottom so that they are not flushed to the sanitary sewer.

(4) Rent tanks directly from the vendor. The Environmental Management Division can provide assistance in recommending vendors and ordering tanks, upon request.

- f. Use shovels and brooms instead of water for cleaning streets and construction site surfaces; do not hose off sidewalks and streets such that soil, concrete, or other debris is flushed down storm or sanitary sewer drains.
- g. Street sweepers may be used provided no debris is discharged into any sanitary or storm water drain.
- h. See Storm Water Management, Chapter 14, for additional requirements for construction projects.

8.4 Requirements

8.4.1 General Management Requirements

8.4.1.1 All industrial wastewater discharges require permission from the Environmental Management Division, per this Chapter.

8.4.1.2 Indoor floor drains are not permitted in area where industrial wastes, including hazardous materials, hazardous wastes, lubricants, etc., are stored. Safety showers may install a temporary plug to remain closed except when the shower is in use.

8.4.1.3 Industrial wastewaters generated from the following activities shall be filtered, allowed to separate by retention, or otherwise captured to remove sludge or suspended solids prior to discharge to the sanitary sewer:

- a. Cleaning of cooling towers and boilers.
- b. Construction dewatering.
- c. Building and equipment washing.

8.4.2 New Cooling Systems

Components of new cooling systems and components within existing systems to be replaced shall be of nonmetallic or noncorrosive composition (e.g., plastics, fiberglass, anodized aluminum, stainless steel) when practical.

8.4.3 Cooling Tower Treatment Chemicals

8.4.3.1 No treatment chemicals (e.g., biological growth, scale, corrosion inhibitors, and dispersants) containing detectable levels of copper, zinc, chromium (total), or tributyltin compounds shall be added to cooling system waters that discharge or will be discharged to the sanitary sewer.

8.4.3.2 Contact the Environmental Management Division to sample and analyze new treatment chemicals, because metal content may not be accurately described in the safety data sheets (SDS).

8.4.4 Storm Water

8.4.4.1 No storm water, groundwater, rain water, street drainage, subsurface drainage, or roof or yard drainage shall be discharged to the sanitary sewer unless specifically authorized by the Environmental Management Division. The Environmental Management Division, upon approval by the relevant sanitary sewer and wastewater treatment authorities may authorize such discharges when no reasonable alternative method for disposal is available.

8.4.4.2 No piping shall be connected such that storm water discharges to the sanitary sewer.

8.4.4.3 All storm drain inlets shall be clearly marked with the words "No Dumping! Flows to Bay."

8.4.5 Laboratory Operations

8.4.5.1 To ensure compliance with the City of Palo Alto and City of Sunnyvale sanitary sewer limitations, laboratory users shall not dispose of hazardous chemicals and first rinsings generated from washing glassware that has come into contact with hazardous chemicals into the sanitary system. All such waste must be containerized for proper disposal.

8.4.5.2 Nonhazardous solutions and first rinsings with pH between 2 and 6 or between 10.5 and 12.5 may be neutralized and discharged to the sanitary system. However, the pH shall be measured both before and after neutralization and recorded to document compliance. For guidance on determining the sewerability of nonhazardous solutions and first rinsings in your laboratory, contact the Environmental Management Division.

8.4.5.3 Personnel shall not adjust the pH of wastewaters with a pH < 2 or > 12.5 unless the appropriate hazardous waste treatment authorization has been obtained. Contact the Environmental Management Division to obtain this authorization and record the information required for performing pH adjustment in the following paragraph.

8.4.5.4 Personnel performing pH adjustment on wastewaters shall record the following information in a log book:

- a. Initial pH of the solution to be adjusted.
- b. Final pH of the solution to be disposed into the sanitary system.
- c. Volume of solution and date(s) of discharge to the sanitary system.

8.4.6 Kitchen Facilities

8.4.6.1 Install and operate grease traps meeting in accordance with Palo Alto and Sunnyvale Municipal Ordinances.

8.4.6.2 Do not install garbage disposals unless preapproved by regulatory agencies and EMD.

8.4.7 Limitation on Points of Discharge

8.4.7.1 General Discharges: Unless authorized, all discharges to the sanitary sewer shall be through an approved building sewer connection.

8.4.7.2 Manholes:

- a. No person shall discharge any substance directly into a city-owned manhole or other opening to the sanitary sewer system outside the property of Ames. Contact the Environmental Management Division if manhole identity and/or system is not clear.
- b. Discharges to Ames-owned manholes must be in accordance with specific permit conditions.

8.4.8 Discharge Permits

8.4.8.1 Persons planning to discharge industrial wastewaters (routine or incidental) to the sanitary sewer must apply for and obtain approval from the Environmental Management Division prior to commencing discharge.

8.4.8.2 New discharges of routine industrial wastewater to the sanitary system must be permitted by the City of Palo Alto Regional Water Quality Control Board (RWQCB) or City of Sunnyvale Water Pollution Control Plant (WPCP). Requesters shall submit the following to the Environmental Management Division at least 70 days prior to discharge:

- a. Location of project and proposed discharge point.
- b. Process description (e.g., photo processing, laboratory wastewater, glassware washing, equipment washing, hydrostatic test water, cooling water, compressor condensate, etc.).
- c. Estimated or actual discharge rate in gallons per day (GPD) for continuous discharges or as total gallons per event and frequency of discharge for batch discharges.
- d. Suspected contaminants and concentrations, if known. Knowledge of process and SDS for any products used are useful in determining suspected contaminants.
- e. Project contact or person responsible for discharge, including phone number, organization code, contract and subcontract company name, and mailstop.

8.4.8.3 Discharge Permit Application for Incidental Industrial Wastewater

a. Discharges of incidental industrial wastewater require a permit prior to discharge to the sanitary system. Dependent upon the nature, volume, or wastewater treatment plant receiving the incidental waste stream, both Environmental Management Division and external regulatory authorization may be required. Therefore, requests for the discharge of incidental industrial wastewater shall be completed by the generator of the waste stream and submitted to the Environmental Management Division at least 10 working days prior to the planned date of discharge. Incidental industrial wastewater discharge request forms shall include:

- (1) Project contact or person responsible for discharge, including phone number, organization code, contractor and subcontractor company name, and mailstop.
- (2) Project location and proposed discharge point (e.g., manhole number).
- (3) Total estimated discharge quantity.
- (4) Duration of discharge.
- (5) Suspected contaminants (e.g., known groundwater contamination from leaking underground storage tanks, regional groundwater solvent plume, metals).
- (6) Analytical test results of containerized wastewater characterizing contaminants from each drawn source. The Environmental Management Office is available to collect samples and facilitate the analysis, lab costs may be charged to the requestor.

8.4.8.4 Discharge Approval

- a. The Environmental Management Division will prepare and submit the application to the appropriate city agency based on the information provided by the requester.
- b. After approval has been received from the appropriate agency, the Environmental Management Division will notify the requester of the approval and any associated conditions. No discharges shall be made until approval has been granted through the Environmental Management Division. When the Environmental Management Division receives authorization, a copy of the approval and any associated permit conditions will be provided to the requester.

8.4.8.5 Permit Modification

a. Generators discharging routine industrial wastewaters to the sanitary system must contact the Environmental Management Division if any of the following occur:

(1) The quantity or quality of waste discharged to the sanitary sewer changes (e.g., changes in chemicals or materials or parts coming into contact with the wastewater, changes in the operational capacity of the system).

(2) The use of facilities is not in conformance with the existing discharge permit (e.g., changes in pretreatment devices, materials, and parts worked on or involved with the process).

b. An application to modify or amend a permit shall be submitted to the Environmental Management Division 70 calendar days prior to commencing or changing any routine industrial discharge, and 10 working days prior to incidental industrial discharges.

8.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
Palo Alto and Sunnyvale Inspection Reports	EMD IWW Lead	Retain local copies at least one year after report	Network Server, Environmental Document Library (EDL)
Palo Alto and Sunnyvale Permit Applications	EMD IWW Lead	Retain local copies at least six years after report	Network Server, EDL
Palo Alto Periodic Report of Continued Compliance	EMD IWW Lead	Retain local copies at least one year after report	Network Server, EDL

CHAPTER 9 MEDICAL WASTE MANAGEMENT

9.1 Applicable Documents and Forms

- a. Minimum Standards for Permitting Medical Waste Facilities 22 CCR §§ 65600 - 65628⁴²
- b. Medical Waste, California Health and Safety Code Sections 117600-118360⁴³
- c. Santa Clara County Ordinance Code, Sections B11-260 to B11-268⁴⁴.

9.2 Personnel Training and Certification

9.2.1 All medical waste generators shall complete the training course “Hazardous Waste, Environmental Essentials and Spill Response” within 3 months of being assigned medical waste generator or management responsibilities.

9.2.2 All medical waste generators shall complete annual refresher training either in person or by taking the online SATERN refresher course (ARC-002-03).

9.3 Responsibilities

9.3.1 **The Environmental Management Division (Code JQ)** shall:

- a. Maintain guidelines regarding medical waste management.
- b. Provide pickup service for medical waste generated from the locations shown in Section 7 and upon request. The Environmental Management Division is the point of contact for the medical waste management subcontractor.
- c. Conduct annual compliance inspections of medical waste generation areas.
- d. Keep pickup, disposal and certificate of destruction records for at least 3 years.
- e. Pay all required regulatory fees related to routine medical waste.
- f. Prepare reports and documentations as required by Federal, State, local, and NASA internal requirements.

9.3.2 **The Exobiology Branch (Code SSX)** shall:

- a. Operate and maintain autoclave operation as follows:
 - (1) Perform final cleaning and disposition of articles, as delineated by the generator.
 - (2) Decontaminate washroom delivery tubs.
 - (3) Return tubs and clean glassware to generator.
- b. Notify the points of contact listed in Appendix C.2 when generators submit items to the washroom that:

⁴²[https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I70A17A90D4BA11DE8879F88E8B0DAAAE&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I70A17A90D4BA11DE8879F88E8B0DAAAE&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))

⁴³https://leginfo.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=HSC&division=104.&title=&part=14.&chapter=&article=

⁴⁴https://library.municode.com/ca/santa_clara_county/codes/code_of_ordinances?nodeId=TITBRE_DIVB11ENHE

- (1) Are unlabeled.
- (2) Contain chemicals.
- (3) Contain sharps.
- (4) Are in non-approved containers or bags.
- (5) Are not in containment tubs.

c. Follow labeling requirements detailed in this chapter.

9.3.3 **Medical waste generators** shall manage medical waste as described in this chapters.

9.4 Requirements

9.4.1 Containment

9.4.1.1 All medical waste shall be placed in properly labeled RED biohazard bags and secondarily contained in impermeable tubs. No other types of bags may be used.

9.4.1.2 Biohazard waste bags shall meet/exceed dual-test strength levels for transportation of biohazard waste, as follows:

- a. ASTM D1922 Elmendorf tear test to exceed 480g of tear strength
- b. ASTM D1709 Dart Impact tested to exceed 165g of dart drop strength

9.4.1.3 Biohazard waste bags shall be labeled "Biohazardous Waste" or with the international symbol and word "Biohazard" (see Appendix C.2). Refer to this chapter for labeling requirements and Appendix C.2 for points of contact for acquisition of red bags.

9.4.1.4 To containerize biohazard bags, a person shall tie the bag to prevent leakage or expulsion of contents during all future storage and handling.

9.4.1.5 External rigid containers shall also bear the words "Biohazardous Waste" or the international symbol and the word "Biohazard" (see Appendix C.2).

9.4.1.6 When placing containers of liquid medical wastes (e.g., liquid blood) in red biohazard bags, generators shall:

- a. Ensure the containers are sealed and leak resistant.
- b. Notify the Environmental Management Division when placing containers of liquid wastes in red bags. The Environmental Management Division will in turn notify the medical waste hauler for safe handling of such bags.
- c. Write "Caution: Liquid Medical Waste" on the Form ARC 749 if the liquid medical waste is placed in biohazard bags for disposal.

9.4.1.7 All sharps must be placed in sharps containers that are rigid, puncture resistant, leak resistant when sealed, and labeled "Sharps Waste" or have the international symbol and the word "Biohazard" (see Appendix C.2). Liquid that may drain from pipettes, syringes, etc. must be expelled prior to the disposal of these sharps.

9.4.1.8 Full sharps containers shall be taped closed or tightly sealed. Sealed sharps containers may be placed in red biohazard bags.

9.4.1.9 Non-medical waste (e.g. animal bedding) should be contained in plain opaque bags and labeled appropriately prior to disposal as trash. However, non-medical waste contaminated with hazardous materials shall be disposed of as hazardous waste.

9.4.2 Labeling

9.4.2.1 All containers of non-medical waste, and bags or trays of labware destined for the Laboratory Glassware Facility shall be labeled with:

- a. Name of responsible person
- b. Room number
- c. Phone number
- d. A brief description of contents
- e. Accumulation Start Date

9.4.3 Storage

9.4.3.1 Storage locations for medical waste shall be secured to deny access to unauthorized personnel.

9.4.3.2 Storage areas (gates, exterior doors, or adjacent locations) shall be marked with warning signs that are legible from a distance of at least 25 feet and contain the following (in English and Spanish):

CAUTION--BIOHAZARDOUS WASTE STORAGE AREA
UNAUTHORIZED PERSONS KEEP OUT
CUIDADO--ZONA DE RESIDUOS "BIOLOGICOS PELIGROSAS"
PROHIBIDA LA ENTRADA A PERSONAS NO AUTORIZADAS

9.4.3.3 Biohazardous waste shall be segregated from all other waste streams.

9.4.3.4 Storage areas shall be under the management of the responsible individual(s) until pickup for disposal by a qualified medical waste management company.

9.4.3.5 Biohazardous waste shall be kept at or below 0°C (32°F) if stored for more than seven (7) days.

9.4.3.6 Full sharps containers may be stored for thirty (30) days with no temperature requirements. When full, sharps containers shall be picked up by a qualified medical waste hauler within thirty (30) days.

9.4.3.7 Sealed sharps boxes may be placed into labeled, red biohazard bags during storage.

9.4.4 Treatment

9.4.4.1 Any treatment methods to be used onsite for biohazardous waste shall be approved by the Environmental Management Division prior to commencement.

9.4.4.2 Used sharps shall not be treated or handled onsite.

9.4.5 Decontamination

9.4.5.1 In the rare event that a primary red biohazard bag ruptures, reusable secondary containers may be washed and decontaminated. The accepted methods include:

- a. Immersion/rinsing in water at 82°C (180°F) for a minimum of 15 seconds.
- b. Rinsing or immersion for three minutes with one of the following solutions:

- (1) Hypochlorite solution (500 ppm available chlorine)
- (2) Phenolic solution (500 ppm active agent)
- (3) Iodoform solution (100 ppm available iodine)
- (4) Quaternary ammonium solution (400 ppm active agent)

9.4.6 Disposal

9.4.6.1 Biohazardous and sharps waste must be brought to a designated pickup point by the generator. The designated pickup locations and contacts are listed this chapter. Contact Environmental Management Division for current list of pick up locations.

9.4.6.2 Animal Carcasses and Bedding

- a. Animal carcasses and contaminated bedding must be placed in properly labeled RED biohazard bags. Refer to generator labeling requirements in this chapter.
- b. Non-contaminated bedding is placed in the trash.

9.4.6.3 Labware and Spent Culture Media

- a. Labware to be reused that contains liquid culture media may be sterilized by autoclaving only if classified as non-medical waste. Labware will be autoclaved and washed for reuse. Sterilized culture media will be discharged to the sanitary sewer if it meets the Industrial Wastewater Standards (See Industrial Wastewater Management, Chapter 8, for more details)
- b. No sharps or chemical-contaminated labware shall be sterilized in the washroom. The autoclave is not a permitted medical waste treatment unit and shall not be used to "treat" biohazardous waste intended for disposal. Only labware to be reused may be autoclaved; after the labware has been designated for disposal, the use of the autoclave is prohibited.

9.4.6.4 Non-contaminated Broken Glass

- a. Waste that contains broken glass from a spill cleanup that has not been in contact with infectious agents and contains no items recognizable as biohazardous is not a medical waste and should be managed as solid waste (see Solid Waste Recycling, Chapter 12, for more details).

9.4.7 Pick Up Locations

Building	Room	Pickup Frequency
N215	Health Unit	Weekly
N236	102	On Demand
N236	112	On Demand
N236	210	On Demand
N236	227	Weekly
N239	B37	Weekly
N239	128	On Demand
N239	210	On Demand
N239	274	On Demand
N240	133C	On Demand
N261	116	Weekly
N261	121	Weekly
N265	Pad	Monthly

9.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
Medical Waste Pickup Record	EMD contractor	3 years	N229B Office
Medical Waste Pickup List of Locations	EMD contractor	3 years	N229B Office
Certificate of Destruction Record	EMD contractor	3 years	T20G Office

CHAPTER 10 NATIONAL ENVIRONMENTAL POLICY ACT AND ENVIRONMENTAL JUSTICE

10.1 Applicable Documents and Forms

- a. National Historic Preservation Act (NHPA), 54 U.S.C. §§ 300101-307108
- b. National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 *et seq.*
- c. Data Quality Act of 2001, section 515 of the Consolidated Appropriations Act, 2001.
- d. NASA Procedures for Implementing NEPA Environmental Quality, 14 CFR Part §1216.
- e. Council on Environmental Quality (CEQ) Regulations, 40 CFR §§ 1500-1508.
- f. Environmental Effects Abroad of Major Federal Actions, E.O. 12114.
- g. Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, E.O. 12898.
- h. Efficient Federal Operations, E.O. 13834.
- i. NPD 8500.1, NASA Environmental Management.
- j. NPR 7120.5, NASA Space Flight Program and Project Management Requirements.
- k. NPR 7120.7, NASA Information Technology and Institutional Infrastructure Program and Project Management Requirements.
- l. NPR 7120.8, NASA Research and Technology Program and Project Management Requirements.
- m. NPR 8580.1, Implementing the National Environmental Policy Act and Executive Order 12114.
- n. California Environmental Quality Act (CEQA), California Public Resources Code § 21000 *et seq.*⁴⁵
- o. CEQA Guidelines, 14 CCR § 15000 *et seq.*⁴⁶
- p. NASA Environmental Justice Strategy (1995).⁴⁷
- q. Environmental Justice Implementation Plan for NASA Ames Research Center (2003).⁴⁸
- r. NASA National Environmental Policy Act (NEPA) Desk Guide (2018).⁴⁹

⁴⁵ https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC§ionNum=21000

⁴⁶ [https://govt.westlaw.com/calregs/Document/I95DC0A00D48811DEBC02831C6D6C108E?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Document/I95DC0A00D48811DEBC02831C6D6C108E?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default))

⁴⁷ Contact EMD for a copy.

⁴⁸ Contact EMD for a copy.

⁴⁹ Contact EMD for a copy.

10.2 Personnel Training and Certification

10.2.1 The ARC NEPA Training shall be completed by personnel responsible for reviewing or authorizing programs, projects, and activities, and for all proponents of proposed programs, projects, and activities. Training shall be completed at least once every 3 years.

10.2.2 NEPA training should be completed by personnel supporting proponents and applicants, such as public affairs officers, legislative affairs officers, finance specialists, and contract specialists. Training should be completed at least once every 3 years.

10.3 Responsibilities

10.3.1 The **Environmental Management Division** shall:

- a. Designate a qualified Center NEPA Manager (CNM) and post contact information on the EMD's external and internal webpages.
- b. Implement the requirements of 14 CFR subpart 1216.3, 40 CFR parts 1500 – 1508 and all guidance prepared pursuant to 1506.7, NPR 8580.1A, NASA Environmental Justice Strategy, CEQA and associated guidelines, and Ames Environmental Justice Implementation Plan.
- c. Ensure the potential environmental effects of Center actions are considered in accordance with EO 12114.
- d. Ensure NEPA reviews are coordinated, as required, with the requirements under the NHPA.
- e. Work to support environmental review and planning as described in procedural requirements for other NASA organizations and division, including as described in NPR 8500.1, 7120.5, 7120.7, and 7120.8.

10.3.2 The **Office of Communication (Code DO) and Office of the Chief Counsel** shall:

- a. Provide support as needed in carrying out the requirements of this Chapter for facilitating public involvement. This may include outreach to minority and low-income populations under the NASA Environmental Justice Strategy, assistance complying with FOIA, and responding to media inquiries and Congressional interest.
- b. Support efforts of the EMD by assisting in the coordination of public meetings to meet NEPA requirements.

10.3.3 The **Center NEPA Manager (CNM)** provides functional support to proponents in completing the NEPA process and oversees compliance with NEPA at ARC. In addition to the responsibilities described in Section 1.2.8 of NPR 8580.1 Section 1.2.8 the CNM shall:

- a. Develop and manage the NEPA Program at ARC following the guidance provided in the most recent version of the NASA NEPA Desk Guide.
- b. Develop and provide NEPA and Environmental Justice training to program, project, and activity managers and other personnel at ARC.
- c. Participate in agency-wide NEPA working groups, such as the NASA NEPA Network, on behalf of ARC.
- d. Develop, and keep up to date, an Environmental Checklist that enables an initial environmental screening of proposed actions for their effects on the natural and human environment.

- e. Complete initial reviews of Proposed Actions, including:
 - (1) Assist project proponents with the completion of action-specific Environmental Checklists.
 - (2) Prepare Record of Environmental Considerations (RECs) as required by 14 CFR § 1216 or as deemed necessary by the CNM.
 - (3) Provide written documentation of determination to project proponent at the conclusion of initial review.
- f. Review and provide comments or concurrence, as appropriate, for NEPA and CEQA documents and technical studies prepared by other agencies when the actions described in the associated document may affect ARC.
- g. Maintain an appropriate administrative record of documentation pursuant to NEPA and as described in this chapter.
- h. Coordinate with State and local officials in preparing integrated NEPA and CEQA reviews.
- i. Coordinate with the Office of Communications and Office of the Chief Counsel to facilitate public involvement activities, such as meetings and access to the FOIA electronic reading room, and to respond to media inquiries, Congressional interest in, and concerns of stakeholders to ensure the environmental public involvement process is conducted as required by NEPA, 40 CFR Part 1500-1508, and 14 CFR Part 1216.
- j. Advise proponents to coordinate with the Center's FOIA Officer, Export Control Officer, Cultural Resources Program Manager, and others to assure that FOIA-restricted information is not disclosed in NEPA documents that may be made available to the public.
- k. Assist with the preparation of NEPA documents (EAs, FONSI, NOIs, EIRs, etc.) in accordance with NPR 8580.1 and as described in the NASA NEPA Desk Guide.
- l. In coordination with the proponent, identify mitigation commitments, including adaptive management processes, that will need to be implemented, and how these will be monitored. Document these requirements in accordance with the NEPA Desk Guide.

10.3.4 NEPA Proponents shall:

- a. Obtain NEPA training every three years from the CNM and/or onsite NEPA support service contractor and be familiar with the provisions of this Chapter.
- b. Carry out their responsibilities as identified in the current version of the NASA NEPA Desk Guide.
- c. Coordinate with the CNM early in the planning process (i.e., during formulation of a proposed program or project) to determine the necessary level of NEPA review or whether other environmental impact analysis or permits may be required. This coordination is typically done by preparing an Environmental Checklist and providing it to the CNM.
- d. If environmental review is required, provide adequate resources, including funding and leadership, to integrate the NEPA process with key project milestones, such as those identified in NPD 8500.1, NPR 8580.1, and the NPR 7120 series. Examples of support include:
 - (1) Providing technical input on the alternative analysis.
 - (2) Supporting the interdisciplinary process, which may involve obtaining outside expertise and conducting special studies (e.g., noise analyses, biological assessments, wetlands and flood plain

mapping, cultural resources surveys, air conformity analyses, and other permitting and permit-by-regulation processes).

(3) Fund and/or manage the preparation of EAs, EISs and other NEPA-related documents, as required.

(4) Participating with the CNM in interagency and intergovernmental coordination and consultations and public involvement activities.

e. Retain copies of NEPA compliance documents in the project management file.

f. Provide support in selecting a contractor to prepare NEPA documents, if contractor support will be used.

g. Ensure contractors who are delegated program or project management authority understand the requirements of this Chapter, including NEPA training.

h. Notify the CNM if the action or circumstances surrounding the action change (whether during the proposal process or after selection).

i. Provide adequate resources to implement required mitigations. This may be done by including the mitigation in the terms and conditions of contracts, grants, leases, use permits, and other similar mechanisms.

j. Maintain records documenting compliance with mitigation and provide information on the status of mitigation implementation upon request to the CNM. If the action is partially complete and mitigation cannot be fully implemented, for example, through the terms and conditions of contracts, grants, leases, use permits, and other similar mechanisms, notify the CNM to determine a course of action consistent with CEQ guidance on mitigation.

10.3.5 Tenants shall:

a. Coordinate with the CNM early in the planning process to determine the necessary level of NEPA review or whether other environmental impact analysis or permits may be required. This coordination is typically done by preparing an Environmental Checklist and providing it to the CNM.

b. Assist NASA with the environmental review process, including:

(1) Providing technical input on the alternative analysis.

(2) Responding to NASA's comments and requests for information during NASA's review of submitted project documentation.

(3) Funding and/or managing the preparation of EAs, EISs and other NEPA-related documents, as required.

(4) Obtaining outside expertise and conducting special studies (e.g., noise analyses, biological assessments, wetlands and flood plain mapping, cultural resources surveys, air conformity analyses, and other permitting and permit-by-regulation processes) or, as described in lease agreements, reimburse NASA for its costs to do so.

(5) Participating with the CNM in interagency and intergovernmental coordination and consultations and public involvement activities.

c. If mitigation is required, incorporate it into project design and provide adequate resources to implement it.

10.4 Requirements

10.4.1 The basic requirements to comply with NEPA are found in the CEQ NEPA regulations, NASA NEPA implementing procedures (14 CFR subparts 1216.1 and 1216.3), and NPR 8580.1. Those regulations and procedures and this Chapter should be read together. In addition to the requirements in the above references:

- a. The ARC CNM contact information shall be posted on the EMD's external and internal webpages.
- b. ARC personnel responsible for reviewing or authorizing programs, projects, and activities, and for all proponents of proposed programs, projects, and activities shall familiarize themselves with environmental review requirements.
- c. The NEPA Proponent or their organization/division is responsible for the costs associated with studies and documentation needed to complete the environmental review process.
- d. Tenants and other external applicants to NASA are responsible for the costs of preparing studies that support a CatEx determination, and costs associated with an EA or EIS. In the latter situation, NASA is responsible for selecting and managing the contractor, although the applicant may provide a short list of proposed contractors.
- e. The Environmental Management Division shall develop and implement a method to evaluate compliance with mitigation measures and environmental impact avoidance measures identified during the environmental review process.

10.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
Environmental Checklists and Records of Environmental Consideration (RECs) for routine and recurrent projects	Center NEPA Manager	Retain indefinitely unless directed by NEPA Manager.	EMD Server; Environmental Document Library
Environmental Checklists and RECs for actions that are not categorically excluded, EAs, EISs, FONSI, RODs, NOIs, and NOAs; EO 12114 documents	Center NEPA Manager	*Permanent* Transfer to NARA 7 years after program, project, or incident closes.	Environmental Document Library; EMD website; NASA NETS; NASA NEPA Document Library
Environmental Resources Document	Center NEPA Manager	Retain indefinitely unless directed by NEPA Manager	Environmental Document Library; EMD website
Correspondence, e.g., establishing Cooperating or Lead Agency status, interagency and public comment	EMD NEPA Document Manager	If significant correspondence: *Permanent* Transfer to NARA 7 years after program, project, or incident closes. If general correspondence: Cut off annually, destroy 3 years after cutoff or when no longer needed, whichever is later.	Environmental Document Library
Mitigation Monitoring Records	Center NEPA Manager	Retain indefinitely unless directed by NEPA Manager.	NETS

Documents referenced in EAs and EISs	Project Manager and/or Center NEPA Manager	*Permanent* Transfer to NARA 7 years after program, project, or incident closes.	Project files and/or Environmental Document Library
Environmental Justice Implementation Plan	Center NEPA Manager	Retain indefinitely unless directed by NEPA Manager	EMD Server; Environmental Document Library

CHAPTER 11 POLYCHLORINATED BIPHENYL (PCB) MANAGEMENT

11.1 Applicable Documents and Forms

a. Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions, 40 CFR Part 761.

11.2 Personnel Training and Certification

11.2.1 All personnel who use or store PCB-containing or PCB-contaminated materials shall receive training in the safe use, handling, and proper storage methods specific to the materials associated with their work and hazards listed in Safety Data Sheets (SDS).

11.3 Responsibilities

11.3.1 **The Environmental Management Division (Code JQ)** shall:

- a. Provide PCB management guidance to Ames ARC personnel.
- b. Sign Hazardous Waste Manifests.
- c. Conduct quarterly PCB transformer inspections.
- d. Provide required reports to regulatory agencies.
- e. Provide disposal service for PCB equipment and waste.
- f. Oversee spill cleanups of PCBs.
- g. Approve PCB storage facility at NASA ARC.
- h. Prepare annual PCB document logs in accordance with requirements set forth in 40 CFR 761, Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions.

11.3.2 **The Facilities Engineering Branch (Code JCE)** shall:

- a. Provide oversight for all construction projects.
- b. Notify the Environmental Management Division when PCB-containing or PCB-contaminated transformers, capacitors, painted surfaces or other equipment or facilities are being modified, relocated, removed from service, or disposed of.

11.3.3 **The Plant Engineering Branch (Code JCM)** shall, for Plant Engineering Branch controlled equipment and painted surfaces:

- a. Provide preventative maintenance.
- b. Manage problems relating to painted surfaces and electrical equipment, including transformers, hydraulic equipment, etc.
- c. Provide resources for the cleanup of non-emergency PCB leaks.
- d. Inspect and document leaking PCB-containing equipment daily, until equipment is repaired or replaced.
- e. Collect samples from PCB-containing or PCB-contaminated equipment
- f. Provide analytical sample results to the Environmental Management Division.

11.3.4 Supervisors shall:

- a. Ensure compliance with PCB regulations in their area of responsibility.
- b. Ensure that sufficient resources are available to comply with this APR.
- c. Ensure that the appropriate spill response materials and personnel protective equipment, as recommended by EMD, are available to employees.
- d. Ensure that employees and contractors receive the training required by this Chapter to handle PCBs.
- e. Provide funding for response to emergency PCB spills which includes labor, analytical testing, and supply costs.

11.3.5 Operators of PCB-containing or PCB-contaminated equipment shall:

- a. Obtain PCB training as required by this Chapter.
- b. Maintain training records and provide copies of any offsite PCB training to the Environmental Management Division.
- c. Provide access for inspections, assessments, and audits by the Environmental Management Division and regulatory agencies.
- d. Implement corrective actions.
- e. Inform the Environmental Management Division of changes in operations affecting storage and use of PCBs.
- f. Promptly report spills, leaks, or other releases of PCBs to the Environmental Management Division.

11.4 Requirements

11.4.1 General

11.4.1.1 General requirements for managing PCB-containing or PCB-contaminated equipment:

- a. The Environmental Management Division shall inspect PCB-containing and PCB-contaminated transformers on a quarterly basis.
- b. Combustible materials shall not be stored within 5 meters of a PCB-containing or PCB-contaminated transformer.
- c. Appropriately label and lock all PCB-containing and -contaminated equipment and the enclosures which house them.
- d. Immediately report any leak in a PCB-containing or PCB-contaminated piece of equipment to the Environmental Management Division.
- e. Immediately clean up releases with trained personnel and document and report all releases.

11.4.2 Labeling

11.4.2.1 In accordance with Federal regulations, the following must be labeled with label approved by U.S. Environmental Protection Agency:

- a. All PCB-containing equipment.

- b. All means of access to PCB-containing or contaminated transformers other than grates or manhole covers.
- c. Specific PCB-contaminated equipment:
 - (1) PCB-contaminated transformers and containers.
 - (2) Electric motors using PCB-contaminated hydraulic fluid.
 - (3) Heat transfer systems (other than transformers) that use PCB-contaminated fluids.

Note 1: See Appendix C.3 for examples of PCB-containing or PCB-contaminated labels, an example of a blue non-PCB (<50 ppm of PCB) label. Labels are available from the Environmental Management Division.

Note 2: The California Department of Toxic Substances Control (DTSC) regulates fluid, articles, containers, and equipment containing PCBs at 5ppm or more as hazardous waste. Therefore, do not assume the blue "non-PCB" label as PCB-free when disposing of the articles. Consult the Environmental Management Division for disposal guidance.

11.4.3 Response Procedure

11.4.3.1 A spill of PCB-containing or PCB-contaminated materials shall be cleaned up only by personnel familiar with the hazards of the material and trained in chemical emergency response including proper use of personal protective equipment (PPE).

11.4.3.2 Any spill or release of PCB-containing or PCB-contaminated material shall be reported to the Environmental Management Division immediately.

11.4.3.3 All spills must be recorded on a spill log available on the Environmental Management Division website.

11.4.3.4 When a spill has been cleaned up, the resulting material shall be managed as a hazardous waste. Refer to Hazardous Waste Management Chapter for instructions on hazardous waste management.

11.4.4 Inspections

11.4.4.1 All PCB-containing and -contaminated transformers must be inspected and documented quarterly by the Environmental Management Division.

11.4.4.2 PCB transformer inspections must include, but are not limited to, the following questions (40 CFR Part 761):

- (1) Is the transformer leaking?
- (2) Is the transformer secondarily contained?
- (3) Are storm drains present near the transformer?
- (4) Are combustibles stored within 5 meters of the transformer?
- (5) Is the transformer enclosure locked?
- (6) What is the inspection date?
- (7) What is the inspector's name?

(8) Is there proper labeling?

11.4.5 Disposal Requirements

11.4.5.1 Any material or piece of equipment, that contains PCBs in a concentration of five (5) parts per million (ppm) or greater shall be disposed of as a hazardous waste (see Appendix C.3 for an example of a label for this type of material). Contact the Environmental Management Division for information concerning proper disposal. Also, contact the Environmental Management Division if it is unclear whether the material or equipment may contain PCBs including soil or sediment.

11.4.5.2 All oil containing less than five (5) parts per million (ppm) shall be sent for recycling.

11.4.5.3 Dilution is not a legal method to reduce the PCB concentration below the regulatory limit. No provision specifying a PCB concentration may be avoided as a result of any dilution.

11.4.5.4 Mixing a PCB waste with another waste stream is also unacceptable. Any PCB waste that is mixed with either a Resource Conservation and Recovery Act (RCRA), radioactive, or other waste shall be disposed of according to all regulations applicable to the mixed components.

11.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
PCB Quarterly Inspection Log	EMD PCB Program Lead	5 years minimum	Bier
PCB Disposal Manifests	EMD PCB Program lead	5 years minimum	N204
PCB Annual Report	EMD PCB Program lead	5 years minimum	N204, T20G, EMD Server, Environmental Document Library
Sample Analytical Results	EMD PCB Program lead	5 years minimum	T20G, EMD Server, Environmental Document Library

11.6 Reports

PCB Annual Document Log				
Frequency:	<i>Annual</i>	Reported To:	<i>Internal Report</i>	
FY or CY Data	<i>CY</i>	Required By:	40 CFR 761.180	
Report Due:	<i>July 1</i>			
Internally Report To:	<i>Hazardous Waste Lead, EMD</i>			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
<i>EMD</i>	<i>Hazardous Waste Lead, EMD</i>	<i>Hazardous Waste Lead EMD</i>	<i>PCB Inspection Records</i>	<i>N/As</i>
<i>EMD</i>	<i>Hazardous Waste Lead, EMD</i>	<i>Hazardous Waste Lead EMD</i>	<i>PCB Disposal Records</i>	<i>Kilograms</i>

CHAPTER 12 SOLID WASTE RECYCLING

12.1 Applicable Documents and Forms

- a. Pollution Prevention Act of 1990, 42 U.S.C. § 13101 et seq.
- b. Regulation of Certain Garbage, 7 CFR Subpart 330.400-01.
- c. Efficient Federal Operations, E.O. 13834.
- d. Federal Acquisition Regulations (FAR) Subpart 23.1 Sustainable Acquisition Policy
- e. NASA Federal Acquisition Regulations (NFS) Subpart 1823.103, Sustainable Acquisition.
- f. California Integrated Management Act of 1989. California Public Resources Code (CPRC), Chapter 2 §§ 40000-49620.
- g. California Beverage Container Recycling and Litter Reduction Act, CPRC, Chapter 4 §§ 14500-14599.
- h. California tire regulatory fee and waste tire program (AB 2908).
- i. Storage of Waste Tires Outdoors, 14 CCR 17354.⁵⁰
- j. Minimum Standards for Solid Waste Handling: 14 CCR 17200 – 17824⁵¹.
- k. Office Paper Reduction Quick Tips. Published by the California Integrated Waste Management Board.⁵²
- l. Waste Reduction Ideas for Offices--Paper, Paper, Everywhere. Published by the California Integrated Waste Management Board.⁵³
- m. The Standard for Storage of Rubber Tires, National Fire Protection Association, NFPA 231D-1998 edition.

12.2 Personnel Training

12.2.1 For specific training requirements and regulatory references, refer to training needs summary in NASA Ames Research Center Safety, Health and Environmental Training Catalog. Class schedule information is available at <https://q.arc.nasa.gov/content/training>.

12.3 Responsibilities

12.3.1 Associate Center Director shall:

Act as a point of contact for resident agencies regarding solid waste management and green purchasing requirements.

⁵⁰ 14 CCR 17354:

[https://govt.westlaw.com/calregs/Document/I5EC1771194BE424786E6581A38104BBD?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)&bhcp=1](https://govt.westlaw.com/calregs/Document/I5EC1771194BE424786E6581A38104BBD?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)&bhcp=1)

⁵¹ [https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I45BB055EDE3A4C9CB23A36B094257232&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I45BB055EDE3A4C9CB23A36B094257232&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))

⁵² Office Paper Reduciton Quick Tips: <http://www.calrecycle.ca.gov/Publications/Documents/BizWaste/44197020.pdf>

⁵³ Waste Reduction Ideas for Offices: <http://www.calrecycle.ca.gov/Publications/Documents/BizWaste/50094028.pdf>

12.3.2 Environmental Management Division (Code JQ) shall:

- a. Notify enforcement agencies and obtain State solid waste permit, if necessary.
- b. Handle all wildlife carcasses suspected of having zoonotic pathogens.
- c. Prepare reports and documentation as required by Federal, State, local, and NASA internal requirements.
- d. Audit offsite solid waste facilities.
- e. Track waste metrics and report on diversion rate in the annual sustainability report and attempt to maintain above a 50% diversion rate of all waste in accordance with the California Integrated Management Act of 1989.

12.3.3 Logistics and Documentation Services Division (Code JS) shall:

- a. Manage various recycling and reuse programs for non-hazardous solid wastes including paper, cardboard, aluminum, plastic, Styrofoam, glass, and wood.
- b. Manage excess, idle, and abandoned equipment through the Property Reutilization office.
- c. Re-utilize, transfer, donate and/or sell all excess equipment through the Property Disposal Office.
- d. Collect and dispose of refuse at ARC and household waste at ARC Lodge.
- e. Manage the food waste generated at NASA Ames Exchange facilities and other food service locations through a center wide composting program, where organic material is sorted on site and composted offsite at the local waste hauler's facility.
- f. Utilize qualified solid waste transporters that meet regulatory requirements found in the Solid Waste Handling and Disposal Standards.
- g. Manage the used and waste tires program. Follow the California Integrated Waste Management Board (CIWMB) regulations for outdoor storage waste tire piles (14 CCR 17354 Storage of Waste Tires Outdoors)
- h. Waste tires stored indoor must meet or exceed the standards set forth in "The Standard for Storage of Rubber Tires," National Fire Protection Association, NFPA 231D-1998 edition, published by the National Fire Protection Association.
- i. Notify the Environmental Management Division if waste tires stored onsite exceed 500 tires at any one time so the EMD may obtain necessary permits.
- j. Recycle all tires through Cal-Recycle when possible as per AB 2908.
- k. Manage the scrap metal bins.
- l. Seek opportunities to implement wildlife resistant refuse bins.
- m. Implement a recycled content and bio-based training for all employees in the AIB store.
- n. Report solid waste disposal and recycling quantities to the Environmental Management Division quarterly no later than 30 calendar days after the end of the quarter and annual totals no later than 45 calendar days after the end of the fiscal year on forms provided by or acceptable to the Environmental Management Division.

12.3.4 Acquisition Division (Code JA) shall:

- a. In accordance with FAR 23.10 Sustainable Acquisitions and NFS 1823.103 Sustainable Acquisitions, when issuing contracts require all contractors to minimize solid waste generation and maximize landfill diversion by source reduction, reuse, and recycling to the maximum possible extent.
- b. In accordance with NFS 1823.103-72 Sustainable Acquisition Reporting, when issuing contracts, require all contractors to report solid waste disposal and recycling quantities to the Environmental Management Division quarterly no later than 30 calendar days after the end of the quarter and annual totals no later than 45 calendar days after the end of the fiscal year on forms provided by or acceptable to the Environmental Management Division.

12.3.5 NASA Research Park Office (Code DT) shall:

When developing agreements, require all tenants and partners to minimize solid waste generation and maximize landfill diversion by source reduction, reuse, and recycling to the maximum possible extent.

12.3.6 Plant Engineering Branch (Code JCM) shall:

- a. Implement the landscape waste, mulching, and reuse operation.
- b. Notify the Environmental Management Division if handling green material, feedstock, additives, amendments, composts, or chipped and ground materials exceeding 500 cubic yards at any one time.
- c. Reuse uncontaminated soil onsite.
- d. Recover and recycle refrigerants.
- e. Report solid waste disposal and recycling quantities to the Environmental Management Division quarterly no later than 30 calendar days after the end of the quarter and annual totals no later than 45 calendar days after the end of the fiscal year on forms provided by or acceptable to the Environmental Management Division.

12.3.7 Facilities Engineering Branch (Code JCE) shall:

- a. Reuse and recycle the Construction & Demolition (C&D) debris to the maximum possible extent.
- b. Report solid waste disposal and recycling quantities to the Environmental Management Division quarterly no later than 30 calendar days after the end of the quarter and annual totals no later than 45 calendar days after the end of the fiscal year on forms provided by or acceptable to the Environmental Management Division.

12.3.8 **Ames Exchange** shall:

- a. Recycle the cooking grease generated at ARC Cafeterias.
- b. Report cooking grease recycling quantities to the Environmental Management Division quarterly no later than 30 calendar days after the end of the quarter and annual totals no later than 45 calendar days after the end of the fiscal year on forms provided by or acceptable to the Environmental Management Division.
- c. Purchase environmentally preferable products discussed in Chapter 15, Sustainability, to be used in both cafeterias.
- d. Provide separate bins for sorting cafeteria waste into organic materials (compostable dish wear and food scraps), single stream recycling, and landfill waste bins.

12.3.9 **Aviation Management Office** shall:

Collect all garbage generated from flights originating outside of the United States and dispose of it in accordance with U.S. laws.

12.3.10 **All personnel** shall:

- a. Minimize solid waste generation through source reduction, reuse, and recycling to the maximum extent practicable as per the Pollution Prevention Act of 1990.
- b. Reuse, recycle, or dispose of material as required in EO 13834.
- c. Flatten all cardboard before putting in recycle bins.
- d. Empty and rinse beverage containers with water before placing in recycle bins as per the California Beverage Container Recycling and Litter Reduction Act.
- e. Place all office paper (white, color, newspaper, magazines, and junk mail) in green totes or large blue single-stream recycling bins for recycling.
- f. Recycle used toner cartridges by calling the AIB (Associated Industries For The Blind) store for pickup at extension x4-6801.
- g. Recycle all Styrofoam materials by putting them into the Styrofoam recycling bin at N233.
- h. Keep refuse bins closed and put lids on trash containers Requirements

12.4 Requirements

12.4.1 Recyclable Materials

If this condition exists	Then take this action
Waste Cardboard	Recycle by placing it in a cardboard collection container (white bins marked for cardboard).
Used Beverage Containers (Plastic and Glass Bottles, Aluminum Cans)	Recycle by placing them in a single stream recycling blue container.
Waste Plastics such as acrylic, nylon, high density polyethylene (HDPE), low density polyethylene (LDPE)	Contact Property, Supply, and Transportation Branch (Code JSL) for recycling
Waste Office Paper (white, color, newspaper, magazines, junk mail, file folders)	Recycle by placing them in a single stream recycling blue container.
Used Toner Cartridges	Call the AIB store for pickup at extension x46801.
Surplus Equipment (appliances, computer equipment, media)	Contact Excess/Disposal for equipment reutilization or disposal.
Uncontaminated Waste Wood and Wood Scrap	Contact Property, Supply, and Transportation Branch (Code JSL) for recycling.
Waste Styrofoam Materials	Bring the Styrofoam to the bin north of N233.
Used/Waste Tires	Contact Property, Supply, and Transportation Branch for recycling.
Cooking Grease	Collected by Ames Exchange and shipped out by a vendor throughout the year.
Construction and Demolition (C&D) Debris	Recycled by the Facilities Engineering Branch (Code JCE). Depending on the construction or demolition project, various vendors may be involved in consolidating materials for recovery and recycling.
Uncontaminated and Usable Soil	Collected and reused by the Plant Engineering Branch (Code JCE).
Landscape Waste	Collected by the Plant Engineering Branch (Code JCE), mulched and put into the mulching pile.
Scrap Metals	Put in blue metal recycling bins.
Refrigerant	Recovered and recycled by the Plant Engineering Branch (Code JCE).

12.4.2 Non-Recyclable Materials

If this condition exists	Then take this action
Wildlife carcasses (birds, squirrels) not suspected of having zoonotic pathogens (West Nile virus, Parrot fever)	Contact Wildlife Specialist.
Wildlife carcasses (birds, squirrels) suspected of having zoonotic pathogens (West Nile virus, Parrot fever)	Contact Wildlife Specialist.
Lab carcasses not defined as biohazardous waste	Double bag and put into outdoor garbage bins with closing lids.
Lab carcasses defined as biohazardous waste	Fill out Form ARC 749 or contact EMD for assistance
Household waste	To be disposed properly by contractor staff under the Logistics and Documentation Services division.
Refuse/ “Trash”	Place in appropriate trash cans for disposal by the janitorial staff under the Logistics and Documentation Services division on set schedules.
Food waste from cafeterias and food service locations	Placed in the appropriate bin for compost sorting and then handled by the janitorial staff under the Logistics and Documentation Services offsite.
Garbage from flights originated outside the U.S.	Contain in tight, covered, leak-proof receptacles. Send to an approved facility for incineration or sterilization.

12.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
Recycling and Sustainable Acquisition Report	EMD Sustainability Lead	Delete local copies 6 yrs. after report	Network Server

CHAPTER 13 SPILL PREVENTION, CONTROL, AND COUNTERMEASURES (SPCC)

13.1 Applicable Documents and Forms

- a. Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq.
- b. Oil Pollution Act (OPA) of 1990 33 U.S.C. §2701 et seq.
- c. Oil Pollution Prevention, 40 CFR Part 112.
- d. Miscellaneous Health and Safety Provisions, California Health and Safety Code (H&SC), Division 20⁵⁴.
- e. Aboveground Storage of Petroleum, California H&SC Chapter 6.67⁵⁵
- f. Hazardous Materials Release Response Plans and Inventory, California H&SC, Chapter 6.95⁵⁶
- g. Underground Storage of Hazardous Substances, California H&SC, Division 20, Chapter 6.7⁵⁷
- h. Tank Inspections, 22 CCR Section 66265.195⁵⁸
- i. Underground Storage Tank Regulations, CCR Title 23 Division 3, Chapter 16⁵⁹.
- j. Santa Clara County Hazardous Material Storage Ordinance, Santa Clara County Code of Ordinances, Title B, Division B11, Chapter XIII⁶⁰
- k. Flammability and Combustibility Code, National Fire Protection Association (NFPA) 30.
- l. California Uniform Fire Code (UFC):
 - (1) Building Services and Systems, UFC Chapter 6.
 - (2) Flammable and Combustible Liquids, UFC Chapter 57
- m. Storage of Organic Liquids, Bay Area Air Quality Management District (BAAQMD): Regulation 8—Organic Compounds, Rule 5⁶¹
- n. NASA Ames Spill Prevention Control and Countermeasures Plan⁶².
- o. SP001 Standard, Steel Tank Institute.⁶³

⁵⁴https://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=HSC&division=20.&title=&part=&chapter=&article=

⁵⁵ http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?division=20.&chapter=6.67.&lawCode=HSC

⁵⁶https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=20.&title=&part=&chapter=6.95.&article=1

⁵⁷http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=20.&title=&part=&chapter=6.7.&article

⁵⁸[https://govt.westlaw.com/calregs/Document/IF7369A90D4BA11DE8879F88E8B0DAAAE?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Document/IF7369A90D4BA11DE8879F88E8B0DAAAE?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default))

⁵⁹[https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I1EB45220D45B11DEA95CA4428EC25FA0&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)&bhcp=1](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I1EB45220D45B11DEA95CA4428EC25FA0&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)&bhcp=1)

⁶⁰https://library.municode.com/CA/Santa_Clara_County/codes/Code_of_Ordinances?nodeId=TITBRE_DIVB11ENHE_CHXII_IHAMAST&showChanges=true

⁶¹ <https://www.baaqmd.gov/~media/dotgov/files/rules/reg-8-rule-5-storage-of-organic-liquids/documents/rg0805.pdf?la=en>

⁶² <https://environmentalmanagement.arc.nasa.gov/reports/spcc.html>

⁶³ See EMD for a copy.

13.2 Personnel Training and Certification

13.2.1 Spill Prevention Control and Countermeasures training and annual refresher (ARC-009-07) shall be completed by all personnel and immediate supervisors who are involved with routine maintenance, storage, handling, transfers, or inspection of operations using petroleum products (oils, fuels) in containers that are 55 gallons or greater.

13.2.2 Storm Water Pollution Prevention Plan training shall be completed by all personnel and immediate supervisors who are involved with activities that have a potential to impact storm water quality.

13.3 Responsibilities

13.3.1 **Environmental Management Division (EMD) (Code JQ)** shall:

- a. Prepare and maintain NASA Ames SPCC plan for ARC per 40 C.F.R. 112, Oil Pollution Prevention. Provide review and Professional Engineer certification of the SPCC plan.
- b. Perform systematic audits of affected facilities to determine the modifications required to achieve compliance with SPCC guidelines.
- c. Review all plans and drawings related to oil storage, handling, or transfer facilities for new construction, maintenance, or remodeling for compliance with California Health and Safety Code (H&SC), Division 20 Chapter 6.67, Chapter 6.7, and CCR Title 23 Division 3, Chapter 16, depending on whether the storage take is aboveground or underground.
- d. Maintain the official file of any permits and forward copies of any correspondence and required permit applications to the appropriate regulatory agencies and onsite contractors performing work.
- e. Submit construction specification plans to the appropriate agencies to obtain permits for petroleum AST installations, modifications, removals, and disposals. Coordinate between Site Managers and Santa Clara County.
- f. Recommend facility modifications to achieve compliance with applicable regulations.
- g. Submit biennial petroleum AST storage tank statements to the Stormwater Resource Control Board (SWRCB) and pay fees (every even numbered year).
- h. Review and evaluate the SPCC Plan at least every five years, or when any major change in facility design, construction, operations, or maintenance occurs which significantly affects the potential to discharge oil, to ensure that the Plan is current and responsive to the activities at ARC and ARC related activities at Moffett Field.
- i. Review and evaluate the need to implement a Facility Response Plan (FRP) at least every five years, or when any major change in facility design, construction, operations, or maintenance occurs which significantly affects the potential to discharge oil.
- j. Maintain current lists of reportable quantities. See Hazardous Materials, Chapter 6, for more information.
- k. Conduct investigations regarding spills.
- l. Provide required training, and maintain accurate employee training records, including employee job descriptions and the type and amount of training received.

13.3.2 NASA ARC Fire Department shall:

- a. Serve as On-Scene Incident Commander and Hazmat responder.
- b. Maintain spill containment and clean up supplies.
- c. Initiate oil spill response and clean up the oil spill to a condition that poses no immediate threat to human health or release to the environment).
- d. Activate Mutual Aid Agreements for spills beyond the resource capability of the NASA ARC Fire Department.
- e. Notify EMD when spill occurs that requires Fire Department Response.
- f. Notify the ARC Office of Communications when a spill will impact the public.

13.3.3 Protective Services Office (Code JP) shall:

- a. Inspect fuel deliveries for visible leaks and defects when vehicles arrive at entrance gate.
- b. Coordinate with the EMD to correct deficiencies listed on physical security surveys of oil storage locations.
- c. Immediately notify the EMD on-call responder of any spills that are reported through the dispatch office.

13.3.4 Facilities Engineering Branch (Code JCE) shall:

- a. Prepare construction specifications and plans for the installation and/or removal of petroleum ASTs and USTs. Submit plans to the EMD for submittal to regulatory agencies for review, approval, and permit purposes prior to installation and/or removal.
- b. Where feasible install ASTs rather than USTs.
- c. Incorporate environmental specifications into construction documents.
- d. Inform the EMD of storage facility modifications by submitting projects as soon as possible, but no later than six months prior to planned change in design, construction, operations, or maintenance.

13.3.5 Plant Engineering Branch (Code JCM) shall:

- a. Maintain Plant Engineering Branch petroleum ASTs in conformance with the standards and requirements prescribed by the Requirements section of this Chapter.
- b. Immediately report known or suspected leaks from petroleum ASTs and associated piping by dialing 911.
- c. Maintain records of routine monitoring and inspections of tanks for minimum of 3 years.
- d. Ensure that the inspection frequency stated in the monitoring plan is consistent with the frequency of inspections being done.
- e. Ensure that filling procedures for Plant Engineering-owned petroleum ASTs are posted on or near the tanks and the stated filling procedures are followed.
- f. Ensure that tanks are labeled with contents, type of hazard (e.g., flammable), and any other pertinent information. See Hazardous Materials Chapter, for hazardous materials labeling requirements.

- g. Perform and record inspections of all Plant Engineering Branch-owned oil storage containers, facilities, and associated secondary containment, as specified in Section 6 of the SPCC Plan.
- h. Maintain spill log to record all spills.
- i. Ensure petroleum ASTs are included on the annual chemical inventory submitted to the EMD as required in the Hazardous Materials, Chapter 6.

13.3.6 Property, Supply, and Transportation Branch (Code JSL) shall:

- a. Obtain and maintain Santa Clara County Underground Storage Tank permits for tanks associated with the motor pool and other branch activities.
- b. Act as the point of contact for the regulators for inspections and permit documentation.
- c. Provide a designated UST operator with a California UST System Operator certification.
- d. Pay all permit fees associated with Branch USTs
- e. Perform all tank and piping inspection requirements required in CCR Title 23 Division 3, Chapter 16.
- f. Oversee all truck loading/unloading and fuel dispensing operations in accordance with Santa Clara County requirements.
- g. Ensure petroleum USTs are included on the annual chemical inventory submitted to the EMD as required in the Hazardous Materials, Chapter 6.

13.3.7 Line Managers shall:

- a. Inspect security systems such as access control, locked storage areas, lighting, fencing, traffic control, and other related features to ensure that spills do not result from vandalism or unauthorized entry.
- b. Immediately report known or suspected leaks from petroleum tanks or containers to ARC Protective Services Office by dialing 911 or 650-604-5555.
- c. With EMD, develop and maintain safety, security, and facility inspection logs for the equipment and facilities under the operator's supervision.
- d. Perform and record inspections of all Plant Engineering Branch-owned oil storage containers, facilities, and associated secondary containment, as specified in Section 6 of the SPCC Plan.
- e. Initiate corrective actions for deficiencies found during inspections.
- f. Maintain spill logs for all oil spills occurring at the facility, including date, location, quantity and type of oil release, description of response, and corrective actions taken. Maintain spill logs for at least three years.
- g. Ensure all personnel who manage, store, or handle fuels or oils attend the training required by this Chapter.

13.3.8 Oil and Fuel Handlers shall:

- a. Attend the training required by this Chapter.
- b. Follow procedures and perform inspections as required by this chapter.
- c. Notify supervisor of any leaks or deficiencies observed or identified by inspections.

13.4 Requirements

13.4.1 General Storage Requirements

13.4.1.1 The contents being stored in petroleum storage tanks shall be compatible with the construction material of the tank.

13.4.1.2 All petroleum storage tanks shall be posted with specific filling and monitoring procedures.

13.4.1.3 Petroleum storage tanks shall be labeled with the contents being stored.

13.4.1.4 Petroleum storage tanks contents shall be stored at the proper temperature and pressure.

13.4.1.5 Storage areas shall be secured to prevent unauthorized use and tampering with petroleum storage tanks

13.4.1.6 Petroleum storage tanks areas should have access to a nearby lighting source in the event of nighttime emergency responses.

13.4.1.7 All petroleum storage tanks areas shall be equipped with adequate spill response supplies.

13.4.1.8 Refer to Hazardous Materials, Chapter 6, for additional storage requirements.

13.4.2 Secondary Containment

13.4.2.1 Secondary containment is required for all stationary or portable (mobile) tanks, containers, equipment, and associated piping.

13.4.2.2 All petroleum ASTs and associated piping shall be secondarily contained, meeting the requirements of Santa Clara County Storage Ordinance and:

- a. Be constructed of materials that are compatible with the materials stored inside the tank.
- b. For a single petroleum AST, be large enough to contain 110% of the primary AST.
- c. For multiple petroleum ASTs, be large enough to contain at least 150% of the largest ASTs volume, or 10% of the aggregate volumes of all ASTs, whichever is greater.
- d. If the petroleum AST containment is open to rainfall, be capable of containing 4.5 inches of rainfall in addition to the required secondary containment volume.
- e. If the petroleum AST containment is open to fire sprinkler discharge, be capable of containing the discharge from all sprinkler heads over the secondary containment system for 20 minutes in addition to the required secondary containment volume.
- f. All USTs should meet secondary containment requirements listed in California Health and Safety Code (H&SC), Division 20, Chapter 6.7

13.4.3 Overfill Monitoring Devices for Tanks

13.4.3.1 New and old tanks shall be fail-safe engineered or updated to a fail-safe engineering status by providing one or more of the following monitoring devices to quickly determine the liquid level in the tank and to prevent overfill:

- a. High-liquid-level alarm with audible or visual signal or both; and liquid-level sensing devices shall be regularly tested according to industry standards to ensure proper operation.
- b. High-liquid-level pump cutoff device to stop flow at a predetermined level within the tank.

- c. Direct audible or code signal communication between the tank gauge and the pumping station.
- d. A fast response system for determining the liquid level in the tank.

13.4.4 Monitoring Devices

13.4.4.1 ASTs shall be fail-safe engineered or updated to a fail-safe engineering status by providing one or more of the following monitoring devices to quickly determine the liquid level in the tank and to prevent overfill:

- a. High-liquid-level alarm with an audible and visual signal. Liquid-level sensing devices should be serviced following manufacturer's specifications to ensure proper operation.
- b. Unprotected ASTs with capacities greater than 1,320 gallons, and protected tanks with any capacity shall be provided with equipment to prevent overfilling as per the table on the following page:

Physical Situation	Approved Overfill Method
At 90% of AST capacity	Audible or visual signal to notify the filler OR AST level gauge marked at 90% of AST capacity OR Other approved means AND
At 95% of AST capacity	Automatically shut off the flow to the AST
Or in lieu of the above two items:	
N/A	The system shall: 1) Reduce the flow rate to not more than 15 gallons per minute so that at the reduced flow rate the AST will not overflow for at least 30 minutes, and 2) Automatically shut off the flow into the tank prior to any tank top fittings being exposed to product.

- c. Direct audible or code signal communication between the AST gauge and the pumping station.
- d. A fast response system for determining the liquid level in the AST.

13.4.4.2 All portions of the underground storage tank system shall be visually monitored in accordance with CCR Title 23, Underground Storage Tank Regulations, as follows:

- a. All visible exterior surfaces of UST including any visible horizontal surface directly beneath the underground storage tank, shall be inspected at least daily by direct viewing. The inspection schedule shall be established so that some inspections are conducted when the substance in the underground storage tank is at its highest level.
- b. A written statement of the routine monitoring procedure shall be available at the facility and the record shall include the frequency of visual inspections, the location(s) from which inspections will be made, the name(s) and title(s) of the person(s) responsible for inspections, and the reporting format.
- c. Written records shall be maintained according to CCR Title 23, section 2712 of Article 10 and include:
 - (1) The liquid level in the underground storage tank at the time of each inspection.
 - (2) A description of any sampling, analyses, and testing procedures conducted to satisfy subsection (b) of this section, including any minimum levels of detection used.

13.4.4.3 UST piping must be monitored in CCR Title 23, Division 3 Chapter 16, Section 2643.

13.4.5 Corrosion Protection for Tanks

13.4.5.1 All buried metallic piping shall be provided with corrosion protection.

13.4.5.2 Metallic storage tanks that are partially buried in soils shall be protected against corrosion for the site-specific soil conditions.

13.4.5.3 Field-installed cathodic protection systems shall be:

- a. Designed and certified as adequate by a corrosion specialist
- b. Tested by a certified tester, according to industry standards, within six months of installation and at least every three years thereafter.

13.4.5.4 Impressed-current cathodic protection systems shall also be inspected no less than every 60 calendar days to ensure that they are in proper working order.

13.4.6 Inspections

13.4.6.1 All petroleum ASTs that are secondarily contained shall be inspected monthly, except as noted in this chapter. The inspection shall match the inspection plan listed in the ARC SPCC Plan and meet SP001 requirements.

13.4.6.2 A record of all inspections, including inspector's name, date of inspection, deficiencies observed, and corrective actions taken, shall be maintained by the operator.

13.4.6.3 Existing non-conforming petroleum ASTs that are not secondarily contained shall be inspected daily. A record of all inspections, including inspector's name, date of inspection, deficiencies observed, and corrective actions taken, shall be maintained by the operator.

13.4.6.4 Storm water from secondary containment structures shall be visually inspected or tested prior to discharging into the sanitary sewer or into the landscaping.

13.4.6.5 Qualified Petroleum ASTs and USTs shall be certified for integrity by an independent professional engineer as required in SP001 and CCR Title 23 Division 3, Chapter 16. EMD will notify tank owner if tank needs to be certified for integrity by an independent professional engineer.

13.4.6.6 Petroleum ASTs containing hazardous waste shall also meet Federal and state hazardous waste management requirements (Hazardous Waste Management Chapter). Specific tank inspection requirements are listed as follows (see 22 CCR 66265.195 and 40 CFR Part 265, including specifically subparts 265.174 and 265.195):

- a. Where present, the following shall be inspected at least once each day:
 - (1) Overfill/spill control equipment (e.g., waste-feed cutoff systems, bypass systems, and drainage systems) to ensure that it is in good working order.
 - (2) The aboveground portions of the AST system, to detect corrosion or releases of waste.
 - (3) Data gathered from monitoring equipment and leak-detection equipment (e.g., pressure and temperature gauges, monitoring wells) to ensure that the AST system is being operated according to its design.
 - (4) The construction materials and the area immediately surrounding the externally accessible portion of the AST system, including secondary containment structures (e.g., dikes) to detect erosion or signs of releases of hazardous waste (e.g., wet spots, dead vegetation).

b. At a minimum, where present, the cathodic protection systems shall be inspected according to the following schedule to ensure that they are functioning properly:

(1) Confirm proper operation of the cathodic protection systems within six months after initial installation, and annually thereafter;

(2) Inspect and/or test, all sources of impressed current at least monthly.

(3) The practices described in the National Association of Corrosion Engineers (NACE) standard, "Recommended Practice (RP-02-85)--Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems", and the American Petroleum Institute (API) Publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems," should be used, where applicable, as guidelines in maintaining and inspecting cathodic protection systems.

c. Documentation of inspections shall be kept in the operating record of the facility.

13.4.6.7 Notify the EMD immediately of any releases so EMD can make the following notifications:

a. 40 CFR Section 265.15(c) requires the remedy of any deterioration or malfunction found;

b. 40 CFR Section 265.196 requires notification to the DTSC within 24 hours of confirming a release; and

c. 40 CFR Part 302 may require notification of a release to the National Response Center.

13.4.7 Operating Permits

13.4.7.1 The storage of a hazardous material and/or hazardous waste requires a hazardous materials storage permit issued by the Santa Clara County Health Department, Hazardous Materials Compliance Division. There is a fee associated with this permit. All operating permit conditions shall be followed.

13.4.7.2 ASTs storing/dispensing volatile materials may require an operations permit from the BAAQMD. See Air Quality Management, Chapter 2.

13.4.7.3 New tank installation requires an Installation Permit from Santa Clara County Department of Environmental Health. See the Installation and Closure Activities section of this Chapter.

13.4.7.4 All USTs require a permit to operate from Santa Clara County. A separate permit is required for each tank.

13.4.8 Integrity Program

13.4.8.1 The Petroleum Aboveground Storage Tanks integrity program shall include:

a. Documentation of inspections discussed in the Inspections section of this Directive

b. A schedule for implementation and monitoring of any needed petroleum AST upgrades developed with facility personnel

c. For suspect or previously verified leaking petroleum ASTs, tank integrity certification (e.g., hydrostatic testing, nondestructive examination of shell thickness, etc.). Biannual independent review of suspect systems (i.e., those systems that note areas of concern during routine self-inspections) may also be required. The requirement for tank integrity certification and biannual independent review will be evaluated on a tank-by-tank basis as determined by the Environmental Management Division.

13.4.8.2 Petroleum Underground Storage Tanks integrity program shall include:

a. Integrity testing of USTs at installation, repair and any other time as required in CCR Title 23. Integrity testing shall be completed by either:

- (1) Volumetric tank integrity test capable of detecting a release of 0.1 gallon per hour from any portion of the tank when the tank is at least 65% full of product or at any product level if the product-filled portion of the tank is tested under pressure equivalent to that of a full tank; or
- (2) A nonvolumetric tank integrity test capable of detecting a release of 0.1 gallon per hour from any portion of the tank at any product level. This method is required if any volumetric tank integrity test is conducted at a product level lower than the overfill protection device .

13.4.9 Hazardous Waste Tanks

13.4.9.1 Existing Hazardous Waste ASTs containing petroleum that do not have secondary containment systems shall have a written assessment reviewed and certified by an independent, qualified, professional engineer, registered in California, who attests to the tank system's integrity and determines that the AST system is adequately designed and has sufficient structural strength and compatibility with the waste(s) to be transferred, stored, or treated to ensure that it will not collapse, rupture, or fail.

13.4.10 Installation and Closure Activities

13.4.10.1 Installation plans shall be approved by the ARC Permit Review Board prior to installation.

13.4.10.2 All petroleum AST and UST installations require a permit issued by the Santa Clara County Health Department, Hazardous Materials Compliance Division, prior to installation

13.4.10.3 Installation activities for petroleum ASTs shall follow applicable Santa Clara County Hazardous Materials Compliance Division guidelines for tank installation and, if applicable, CCR Title 26 regulations for hazardous waste tanks.

13.4.10.4 Installation activities for petroleum USTs shall follow applicable Santa Clara County Hazardous Materials Compliance Division guidelines for tank installation and, if applicable, CCR Title 23 Underground storage tank regulations

13.4.10.5 The Santa Clara County Department of Environmental Health requires integrity testing of petroleum ASTs, USTs, and associated piping prior to operation, following manufacturer's specifications. Often a representative of the tank manufacturer is present to conduct the AST testing. The Santa Clara County Health Department requires at least a 48-hour notification prior to integrity testing so that a county inspector can witness the test.

13.4.10.6 Aboveground petroleum ASTs shall rest on a foundation of concrete, masonry, piling, or steel, to minimize the potential of uneven settling and to minimize corrosion to any part of the AST resting on the foundation. The AST shall also be provided with seismic bracing.

13.4.10.7 The secondary containment structure for petroleum ASTs shall provide a method for drainage control to prevent the accidental discharge of any liquid present within the secondary containment. If the drainage control area is diked, it shall be liquid tight and withstand full hydrostatic head, and have provisions to remove any excess liquid.

13.4.10.8 All new petroleum ASTs and their associated piping shall be secondarily contained.

13.4.10.9 Fire protection shall be provided in accordance with UFC 79.510 and depends on the size and type of AST, location of the tank (i.e., distances from buildings, property lines, and public ways) and the class of liquid in the AST. Refer to the UFC 79.510 for details.

13.4.10.10 Petroleum ASTs shall be protected from impacts by bollards or retaining wall similar structure.

13.4.10.11 Permits may be required from BAAQMD for storage and/or dispensing of volatile materials. See Air Quality, Chapter 2, and Environmental Management Division for more information.

13.4.10.12 All petroleum ASTs and UST closure activities require a permit issued by the Santa Clara County Health Department, Hazardous Materials Compliance Division. See Environmental Closure Chapter 4.

13.4.11 Spills

13.4.11.1 A non-reportable spill shall be recorded in the facility's spill log. A non-reportable spill is one in which oil does not escape to the environment and:

- a. The material will not pose a health risk to any individual in the immediate area and;
- b. The spill can be controlled and contained with on-hand spill response materials and;
- c. The properties of the material are well known to the person(s) controlling and containing the spill and;
- d. The person(s) controlling and containing the spill have had appropriate training.

13.4.11.2 Contact NASA Dispatch or the Environmental Management immediately when a reportable spill occurs. A reportable spill is actual or threatened discharge of an oil that enters the environment. Examples include:

- a. A spill enters a storm drain or ditch.
- b. A spill enters the sanitary sewer.
- c. A spill contacts soil.
- d. A spill contacts asphalt (particularly in the case of solvents).
- e. A spill into secondary containment requires more than eight hours to clean

13.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
NASA ARC Spill Prevention Control and Countermeasures Plan	SPCC Program Manager, EMD	Maintain copy onsite permanently.	EDL, EMD offices
Inspection records of all oil storage locations and aboveground tank locations	Various chemical owners	Delete local copies 6 yrs. after report	Various locations
Release of storm water from secondary containment	Various chemical owners	Delete local copies 6 yrs. after report	Various locations

13.6 Reports

Spill Prevention Control and Countermeasures Plan, Annexes, Volume 1 & 2

Frequency:	5 years	Reported To:	Santa Clara County Environmental Health Department		
FY or CY Data:	CY	Required By:	Title 40 Code of Regulations Section 112.7		
Internal Report To:	Water Program Manager, EMD	Report Due:	Update every 5 years or when substantial change to inventory		
Data Source	Primary Contact		Contact Past Reports	Data Required	Units
EMD	EMD Chief EMD Water Compliance Program Manager		EMD Water Compliance Program Manager		
Plant Engineering Branch	Plant Engineering Branch Chief				
All Codes with Oil Storage	Tank Owner				

CHAPTER 14 STORM WATER MANAGEMENT

14.1 Applicable Documents and Forms

- a. Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq.
- b. National Pollutant Discharge Elimination System, 40 CFR Part 122.
- c. State Program Requirements, 40 CFR Part 123.
- d. Title 23 CCR, Waters⁶⁴
- e. NPDES No. CAS000001: General Permit for Storm Water discharges Associated with Industrial Activities (IGP)⁶⁵
- f. NPDES No. CAS000002: State Water Resources Control Board General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit)⁶⁶
- g. NPDES No. CAS000004: General Permit for Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (also known as an MS4)⁶⁷
- h. NPDES No. CAG912002: California Regional Water Quality Control Board San Francisco Bay Region General Waste Discharge Requirements for Discharge or Reuse of Extracted and Treated Groundwater Polluted by Volatile Organic Compounds (VOC), Fuel Leaks and Other Related Wastes (VOC and Fuel General Permit)⁶⁸
- i. California Storm Water Best Management Practices (BMP) Handbook for Construction Activity⁶⁹
- j. Storm Water Pollution Prevention Plan (SWPPP), NASA ARC⁷⁰

14.2 Training

14.2.1 All personnel and supervisors of personnel who are involved with activities that have a potential to impact storm water quality shall take Storm Water Pollution Prevention training or ARC-001-01 annually.

⁶⁴[https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I010C6BF0D45A11DEA95CA4428EC25FA0&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I010C6BF0D45A11DEA95CA4428EC25FA0&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))

⁶⁵ https://www.waterboards.ca.gov/water_issues/programs/stormwater/igp_20140057dwq.html

⁶⁶ https://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.html

⁶⁷ https://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.html

⁶⁸ https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/npdes/R2-2017-0048/Order_No._R2-2017-0048-FINAL.pdf

⁶⁹ <https://dot.ca.gov/programs/construction/storm-water-and-water-pollution-control/manuals-and-handbooks>

⁷⁰ Contact EMD for copy.

14.3 Responsibilities

14.3.1 Environmental Management Division (Code JQ) shall:

- a. Prepare the SWPPP and the ARC Storm Water Monitoring Plan, and other Permit Required Documentation (PRDs).
- b. Submit the Storm Water Annual Report to the Regional Water Quality Control Board.
- c. Maintain permits and pay scheduled fees.
- d. Conduct annual inspections of industrial areas as identified in the NASA SWPPP for storm water compliance.
- e. Conduct monthly visual observations of each drainage area as identified in the NASA SWPPP
- f. At each discharge location where a sample is obtained, the Discharger shall observe the discharge of storm water associated with industrial activity.
 - (1) Collect and analyze the following samples as required in the IGP.
 - (2) Storm water at each discharge location during Qualified Storm Events (QSE).
 - (3) Storm water discharge from all active emergency pumps during flood events.
 - (4) Catch basin debris.
 - (5) Settling basin sludge.

14.3.2 Facilities Engineering Branch (Code JCE) shall:

- a. Ensure project compliance with IGP and Construction General Permit requirements.
- b. Follow NASA and ARC BMPs for storm water pollution prevention during construction and maintenance activities.

14.3.3 Plant Engineering Branch (Code JCM) shall:

- a. Conform to all applicable BMPs.
- b. Provide preventive maintenance of the storm water conveyance system including:
 - (1) Remove sediment and debris from system components
 - (2) Maintain catch basins.
 - (3) Maintain painted signs that mark storm drain inlets: “No Dumping Flows to Bay.”
 - (4) Periodically inspect and maintain storm drain inlets , with a full inspection of the storm distribution system every five years.
 - (5) Vacuum catch basins and building laterals annually and properly dispose of any wastewater.
 - (6) Notify EMD of dates and locations of catch basins to be cleaned 1 month prior to cleaning events.
- c. Respond to trouble calls relating to the storm water conveyance system.
- d. Provide street sweeping services for main streets and parking lots with a vacuum sweeper on a scheduled basis to remove oil, grease, suspended particulates, metals, and petroleum byproducts of engine combustion, which can contribute to storm water pollution through runoff from streets and parking lots.

e. Notify EMD when emergency pumps will be operated during storm or flood events so that EMD can provide a site-specific BMP and perform sampling and analysis of the discharge water as required by the IGP.

f. Maintain dumpsters, ensuring that they are in good condition, lids are closed, and waste materials are not overflowing.

14.3.4 Line Management and Contracting Officer's Representatives shall:

a. Ensure compliance with storm water pollution prevention regulations.

b. Ensure that sufficient resources are available to achieve compliance with this Chapter.

c. Ensure that the appropriate spill response materials are readily available, and personnel are properly trained in the use of these materials.

d. Ensure all personnel who have a potential to impact storm water quality attend SWPPP training.

e. Ensure that employees understand that storm drains connect directly to streams and the bay without treatment.

14.3.5 Tenants and Partners shall:

a. Conduct activities in accordance with this chapter unless otherwise stated in the lease agreement.

b. Obtain NPDES permits from the San Francisco Bay Regional Water Quality Control Board (RWQCB) for their facilities when not covered by NASA's Industrial Permit.

14.3.6 All personnel shall:

a. Conduct all operations in compliance with the Storm Water Pollution Prevention Plan training.

b. Maintain and make available required spill log and training records, as requested by the Environmental Management Division (EMD) and/or regulatory agencies.

c. Participate and provide input in order to complete plans and reports on time.

d. Provide access for inspections, assessments, and audits by the EMD and, and/or regulatory agencies.

e. Implement corrective actions assigned to their organization.

f. Maintain training records for a minimum of 5 years.

g. Maintain operations in accordance with the ARC SWPPP and the ARC Best Management Practices (BMPs).

h. Inform the EMD of changes in operations or practices that may affect storm water pollution prevention efforts.

i. Maintain good housekeeping procedures in all outdoor areas as specified in the Stormwater BMPs.

j. Maintain spill log.

14.4 Requirements

14.4.1 General Requirements for Storm Water Pollution Prevention

14.4.1.1 All hazardous materials shall be kept away from storm drain access.

14.4.1.2 ARC BMPs shall be implemented as required by operations, otherwise Minimum BMPs should be followed.

14.4.1.3 A new Site-Specific BMP shall be requested when a BMP does not exist but operations have the ability to impact the storm system.

14.4.1.4 Only rainwater can enter storm drain. If anything other than rainwater (including potable water) enters the storm drain it should be treated as spill.

14.4.1.5 Spills shall be cleaned up immediately by trained personnel and all spills shall be documented in a spill log regardless of the size of the spill.

14.4.1.6 Any spill large enough to take more than 1 hour to clean up, shall be reported and Dispatch contacted by dialing 911 (from an ARC phone) or 650-604-5555 (from a cellular phone).

14.4.1.7 The EMD shall make all off-site regulatory reports for reportable spills. A reportable spill is any actual or threatened discharge of an oil that enters the environment. Examples include:

- a. A spill that enters a storm drain or ditch.
- b. A spill that enters the sanitary sewer.
- c. A spill that comes into contact with the ground, including asphalt, concrete, or gravel.
- d. A spill into secondary containment that requires more than eight hours to clean up.

14.4.1.8 All storage areas shall be kept free of debris and rainwater.

14.4.1.9 All storage areas shall be secured and labeled in accordance with the Hazardous Materials Chapter.

14.4.1.10 Adequate secondary storage, according to Santa Clara County Hazardous Material Storage Ordinance Section B11-286(c), shall be provided for all liquid materials or wastes and:

- a. Made of a material that will withstand the liquid being stored
- b. Provide 150% of the volume of the largest primary container when more than one primary container is in the secondary containment or 110% of the volume of a single primary container.
- c. Contain 24 hr. of rainfall from a 100-year storm (7 inches) if the secondary containment is outside.

14.4.1.11 Storm water from tank secondary containment structure(s) shall be visually inspected or tested prior to discharging. Clean storm water, with no visible sheen or deemed clean by testing, may be released into the sanitary sewer or preferably into the landscape.

14.4.1.12 Each instance of the release of storm water from secondary containment structures shall be recorded on a spill log. These spill logs shall be maintained for at least five years.

14.4.1.13 All refuse, recycling, compost and waste bins shall be kept in good condition and remain covered or closed.

14.4.2 Specific Management Requirements

14.4.2.1 All facilities at ARC shall comply with all the ARC Minimum BMPs and additional Advanced BMPs and Site-Specific BMPs that are assigned to each facility by EMD. The ARC Minimum BMPs are:

- a. Employee Training Program.

- b. Erosion and Sediment Controls.
- c. Good Housekeeping.
- d. Material Handling and Waste Management.
- e. Preventive Maintenance.
- f. Quality Assurance and Recordkeeping.
- g. Spill and Leak Prevention and Response.
- h. Advanced BMPs are:
 - (1) Control Devices.
 - (2) Overhead Coverage.
 - (3) Retention Ponds.
 - (4) Secondary Containment Structures.
 - (5) Water Treatment.

14.4.2.2 The ARC Site-Specific BMPs that may be assigned by EMD are:

- a. Aircraft Maintenance.
- b. Aircraft Exhaust and Fueling.
- c. Aircraft Washing and Rinsing.
- d. Building and Grounds Maintenance.
- e. Building Repair, Remodeling, and Construction.
- f. Construction, Demolition, and Excavation Operations That Disturb Ground Surfaces Less Than One Acre.
- g. Display Aircraft Washing and Rinsing.
- h. Elimination of Non-Storm Water Discharges.
- i. Fire Department Equipment Testing and Training.
- j. Fleet Parking.
- k. Fuel Tank Vehicles.
- l. Golf Course Maintenance.
- m. Outdoor Process Equipment Operations and Maintenance.
- n. Source Reduction.
- o. Transportation Control Measures.
- p. Utility Vault Dewatering.
- q. Vehicle and Equipment Fueling.
- r. Vehicle and Equipment Maintenance and Repair.

- s. Vehicle and Equipment Washing.
- t. Washing of Exterior Building Surfaces and Fixed Outdoor Equipment.

14.4.2.3 All on-site industrial activities shall utilize the Source Reduction BMP to reduce the accumulation of potential pollutants at ARC.

14.4.2.4 All on-site construction activities shall utilize ARC BMPs along with the applicable BMPs in the California Storm Water Best Management Practices Handbook for Construction Activity.

14.4.2.5 All on-site construction activities that disturb 1 acre or more ground surface shall apply for a Notice of Intent (NOI) with the SWRCB, provide a site specific SWPPP along, and adhere to the requirements that pertain to the threat level designated by the project's Qualified SWPPP Developer.

14.4.3 Buildings and Grounds Maintenance Personnel shall:

- a. Maintain landscaped areas, parking lots, roads, removing landscaping debris that may flow to storm drains.
- b. Prevent or reduce the discharge of pollutants to storm water from buildings and grounds maintenance by washing and cleaning up with as little water as possible.

14.4.4 Pesticide or Fertilizer Management

- a. Prevent and clean up spills immediately.
- b. Keep debris from entering the storm drains.
- c. Apply pesticides or fertilizers according to manufacturer's directions.
- d. Avoid overwatering to avoid the discharge of water that may have become contaminated with nutrients and pesticides.
- e. Properly dispose of used containers.
- f. Pesticide applicators shall be licensed with the California Department of Pesticide Regulation and county agricultural commissioner.
- g. No person shall transport, handle, store, load, apply, or dispose of any pesticide, container, or apparatus in such a manner as to pollute water supplies or waterways, or cause damage or injury to lane, humans, plants, or animals.

14.4.5 Elimination of Non-Storm Water Discharges

14.4.5.1 Any discharges into the storm drainage system other than storm water are prohibited, unless prior authorization has been received from the EMD.

14.4.5.2 Illicit connections to the storm drain system are prohibited. Illicit connections to the storm drain system shall be immediately reported to the EMD and corrected as soon as possible. EMD shall report all illicit connections to the SWRCB.

14.4.5.3 Management Responsible for an illicit connection shall:

- a. Report schedule for correcting illicit connections to the EMD.
- b. Plug, disconnect, or remove all floor drains.
- c. Remove obsolete sinks, equipment, etc.

d. Reroute required connections to the sanitary sewer.

14.4.5.4 Illegal dumping is prohibited. Illegal dumping includes, but is not limited to placing any of the following into the storm drain system:

- a. Any water used in a manufacturing process (process water).
- b. Non-contact cooling water.
- c. Outdoor secondary containment water that has come in contact with any pollutants.
- d. Vehicle and equipment wash water.
- e. Sink and drinking fountain wastewater.
- f. Sanitary wastes.
- g. Other Wastewater

14.4.5.5 Anyone responsible for operations that frequently generate any liquid wastes that might reach the storm drain shall provide well-marked, proper disposal or collection methods for wastewater wherever wash water is generated or cooling water is discharged, or other liquid waste is produced that might otherwise reach the storm drain shall:

- a. Comply with ARC Minimum BMP: Material Handling and Waste Management
- b. Materials leaked, spilled, or lost during loading/unloading activities may collect in the soil or on other surfaces and be picked up by storm water.
- c. When materials are received, they shall remain in the travel path only for a time reasonably necessary to transport the materials, but no longer than 24 hours.
- d. Use of trip plans during delivery transport is encouraged.
- e. A written operations plan that describes procedures for loading and/or unloading shall be used.
- f. During transfer activities, staff shall use drip pans/impermeable drip cloths.
- g. Prepare an emergency spill cleanup plan prior to the start of material transfer activities.
- h. Employees trained in spill containment and cleanup shall be present during material transfer activities.
- i. Each material transfer area shall have an appropriately stocked spill-kit near.
- j. Park delivery and transfer vehicles so that spills or leaks can be contained.
- k. Cover material transfer docks to reduce exposure of materials to rain.
- l. Cover nearby storm drain inlets during transfer activities.

14.4.6 Preventive Maintenance Staff shall:

14.4.6.1 Know leaks, spills, and other discharges of outdoor equipment can contribute to storm water pollution.

14.4.6.2 Outdoor equipment includes, but is not limited to:

- a. Rooftop cooling towers.
- b. Air conditioners.

- c. Air vents for industrial equipment.
- d. Outdoor air compressors.
- e. Outdoor service equipment.
- f. Indoor wet processes where leaks or discharges may flow to outdoor areas.
- g. Material transfer equipment.

14.4.6.3 Inspect equipment on a regular basis for leaks, malfunctions, and wear that could lead to a leak (such as frayed hoses).

14.4.6.4 Assign an inspector the responsibility of reporting a spill to the EMD.

14.4.6.5 Report known or suspected leaks from petroleum tanks or containers immediately to the Ames ARC Protective Services by dialing 9-1-1 (from an Ames ARC phone) or 650-604-5555 (from a cellular phone).

14.4.6.6 Develop a routine for taking follow-up actions after a spill: spill reporting, clean-up, proper waste disposal, and corrective actions.

14.4.6.7 If absorbent material is used to clean up a spill, sweep it up and properly dispose of it immediately.

14.4.6.8 Place equipment on an impermeable surface, or install drip pans beneath potential leak points.

14.4.6.9 Perform maintenance activities indoors, or beneath overhead coverage when possible to reduce or eliminate contact with storm water.

14.4.7 Air Compressor Operation

14.4.7.1 Blow-down from air compressors and associated equipment, containing lubricating oil or other potential pollutants is not discharged to any outside areas that flows to the storm drain.

14.4.7.2 Blow-down water containing pollutants shall be disposed in accordance to Chapter 8, Industrial Storm Water Management.

14.4.8 Electrical Equipment Operation and Maintenance shall:

- a. Take care when tapping oil-containing equipment.
- b. Avoid drips and leaks and place drip pans or absorbent padding with the impervious lining side down under electrical equipment prior to tapping.
- c. Properly dispose of oil-contaminated materials and ensure that any materials that have come in contact with polychlorinated biphenyls (PCBs) are bagged, labeled, and disposed of in accordance with 40 CFR Part 761.
- d. Follow Polychlorinated Biphenyl Management requirements for all electrical equipment containing PCBs.
- e. Contact the EMD if you have any questions regarding the PCB Program and disposal requirements.

14.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
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IGP Records: <ul style="list-style-type: none"> • NOI • Inspections • Spill • Maintenance activities • Corrective actions • Visual observations • Sampling and analysis results • Annual reporting documents • Copy of the IGP 	Water Compliance Program Manager, EMD	5 Years	Network Server, Environmental Document Library
Storm Water Construction General Permit Records: <ul style="list-style-type: none"> • NOIs • Inspections • Spills • Maintenance activities • Corrective actions • Visual observations • Sampling and analysis results • Annual reporting documents 	Water Compliance Program Manager, EMD	5 Years	Network Server, Environmental Document Library
Facility Spill Log	Facility Owner	5 years	On site or Network Server

14.6 Reports

Industrial General Permit Storm Water Annual Report				
Frequency:	Annually	Reported To:	SWRCB	
FY or CY Data	July 1 — June 30	Required By:	IGP	
Report Due:	July 15			
Internally Report To:	Water Compliance Program Manager			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
<i>Environmental Management Division, Facility Service Managers</i>	Water Compliance Program Manager	Water Compliance Program Manager	Visual observations, sampling results, spill logs.	NA

Construction General Permit Storm Water Annual Report			
Frequency:	Annually/as needed	Reported To:	SWRCB
FY or CY Data	July 1 — June 30	Required By:	IGP
Report Due:	August 15		

Internally Report To:	Water Compliance Program Manager			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
<i>Environmental Management Division, Facility Service Managers</i>	Water Compliance Program Manager	Water Compliance Program Manager	Visual observations, sampling results, spill logs.	NA

Annual Comprehensive Site Compliance Evaluation				
Frequency:	Annual	Reported To:	SWRCB	
FY or CY Data	July 1 — June 30	Required By:	IGP	
Report Due:	with 12 months of inspections			
Internally Report To:	Water Compliance Program Manager			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
<i>Environmental Management Division, Facility Service Managers</i>	Water Compliance Program Manager	Water Compliance Program Manager	Visual observations	N/A

Storm Water Pollution Prevention Plan Update				
Frequency:	As required	Reported To:	SWRCB	
FY or CY Data	July 1 — June 30	Required By:	IGP	
Report Due:	As required: Within 30-days– Significant updates Quarterly–minor changes/typographic al corrections			
Internally Report To:	Water Compliance Program Manager			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
<i>Environmental Management Division,</i>	Water Compliance Program Manager	Water Compliance Program Manager		N/A

<i>Facility Service Managers</i>				
QSE Sampling Report				
Frequency:	2 between July 1 and Dec 31 2 between Jan 1 and June 30	Reported To:	SWRCB	
FY or CY Data	July 1 — June 30	Required By:	IGP	
Report Due:	30 days after receipt of analytical results			
Internally Report To:	Water Compliance Program Manager			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
<i>Environmental Management Division</i>	Water Compliance Program Manager	Water Compliance Program Manager	Laboratory analytical data	N/A

CHAPTER 15 SUSTAINABILITY

15.1 Applicable Documents and Forms

- a. Biomass Research and Development Act of 2000, Title III of the Agriculture Risk Protection Act of 2000.
- b. Clean Air Act of 1970 (42 U.S.C. §§ 7401 et seq.) Non-ozone-depleting Substances Safe Alternatives Policy.
- c. Farm Security and Rural Investment Act of 2002, 7 USC § 8102 (Federal Procurement of Biobased Products).
- d. Pollution Prevention Act of 1990 (42 U.S.C. § 13101 et. seq.).
- e. Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA), Pub. L. 99-499; 42 USC 11001 et seq.
- f. Resource Conservation and Recovery Act of 1976, 42 U.S.C. Chapter 82 § 6901 et seq..
- g. Energy Policy Act of 2005, 42 U.S.C. § 13201 et. seq.
- h. Energy Independence and Security Act (EISA) of 2007, Pub. L. 110-140.
- i. Efficient Federal Operations, E.O. 13834.
- j. Federal Acquisition Regulation (FAR) Part 23 - Environment, Energy, and Water Efficiency, Renewable Energy Technologies, Occupational Safety, and Drug-Free Workplace.
- k. Federal Acquisition Regulation: High Global Warming Potential Hydrofluorocarbons, 81 CFR pt. 30429.
- l. NPR 8530.1, NASA Sustainable Acquisition.
- m. NASA Form 1707, Special Approvals and Affirmations of Requisitions
- n. EPA Comprehensive Procurement Guidelines (CPG) (Includes links to Safer Choice, Water Sense, USDA BioPreferred)⁷¹
- o. SmartWay⁷²
- p. Energy Star Program⁷³
- q. List of Ozone Depleting Substances (ODS) and high Global Warming Potential (GWP) substances substitutes developed under EPA's SNAP program.⁷⁴
- r. List of Toxic Release Inventory (TRI) chemicals from US EPA.⁷⁵
- s. NASA HQ Sustainability Report and Implementation Plan (SRIP)⁷⁶

⁷¹ EPA CPG: <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program>

⁷² Smartway: <https://www.epa.gov/smartway>

⁷³ Energy Star Program: <https://www.energystar.gov/>

⁷⁴ ODS and GWP Substances: <https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances>

⁷⁵ TRI Chemicals: <https://www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals>

⁷⁶ <https://www.sustainability.gov/nasa.html>

15.2 Training and Certification

15.2.1 Purchase Card Holders shall:

15.2.1.1 Complete SATERN Green Purchasing (ARC-002-06) training or, if available, Environmental Management Division onsite Green Purchasing training.

15.2.2 Contracting Officers and Contracting Officer's Representatives shall:

15.2.2.1 Complete the Federal Acquisition Institute Training Application System (FAITAS) Green Purchasing for Civilian Acquisition (FAC 018) training.

15.3 Responsibilities

15.3.1 **Environmental Management Division** shall:

- a. Prepare an annual TRI Report.
- b. Make threshold determinations for TRI chemical use based on information reported by each division and chemical user as required in Chapter 5, EPCRA.
- c. Report quantities exceeding regulatory reporting thresholds to the EPA as required by EPCRA Chapter 5.
- d. Prepare and submit an annual Recycling and Sustainable Acquisition progress report to HQ via the Principal center for Recycling and Sustainable Acquisition (RSA) at the Kennedy Space Center and the EPA.
- e. Report usage quantities of ozone depleting substances to NASA Headquarters.
- f. Manage ACE, including maintaining the ACE inventory.
- g. Prepare Pollution Prevention and Hazardous Waste Minimization plans and reports as required by environmental regulations and NASA Headquarters, including the SB14 report, biennial excluded recyclable materials report, and the cathode ray tube (CRT) handler report.
- h. Track and report on other sustainability performance metrics including water and energy efficiency, and Sustainability Report and Implementation Plan (SRIP) metrics through an Annual Sustainability Report.
- i. Develop a Five-Year Sustainability Plan that meets the goals of the NASA HQ SRIP and details strategies and actions to reach these goals.
- j. Review Sustainable Acquisition Request for Waiver Forms (NF 1707) and approve or deny the requests.
- k. Conduct outreach in support of Earth Day and other sustainability related events.

15.3.2 **Logistics and Documentation Services Division** shall:

- a. Stock items composed of the highest percentage of post-consumer/ recovered materials available in EPA's Comprehensive Procurement Guideline standards and this chapter including issue post-consumer waste (PCW) recycled copier paper to fill orders that do not specify 30% PCW or virgin paper per EO 13834.
- b. Stock remanufactured toner cartridges.

- c. Use General Services Administration (GSA) Federal Supply Service to stock recycled products (e.g., paper, paper products, and office supplies) as much as possible.
- d. Support phase out of ODSs and high GWP substances by stocking only items that are free of ODSs and high GWP substances.
- e. Ensure supply purchases made for motor vehicle maintenance and management, and janitorial supplies and services give preference to USDA BioPreferred Designation Items and used where practicable.
- f. Ensure that in choosing freight companies, preference is given to SmartWay Partners when practicable.
- g. Report all designated post-consumer/ recovered materials purchases and biobased purchases to the Environmental Management Division, when requested.
- h. Develop and implement a plan to ensure that non-construction and demolition solid waste is diverted and pursue opportunities for net-zero waste and additional diversion as required by EO 13834.
- i. Report quantities of solid wastes diverted to the Environmental Management Division on a quarterly bases in accordance with this chapter.

15.3.3 Plant Engineering Branch shall:

- a. Develop a phase-out plan for ODSs.
- b. Report ODSs and high GWP substances stored, used, and recovered/recycled from equipment to the Environmental Management Division in accordance with this chapter.
- c. Develop and implement a plan to divert compostable material and pursue additional opportunities for zero-waste as required by EO 13834 and report quantities of diverted compostable material to EMD when requested.

15.3.4 Facilities Engineering Branch shall:

- a. Develop and implement a plan to ensure that the maximum practical amount of construction and demolition solid waste is diverted as required by EO 13834.
- b. Report all quantities of construction and demolition solid waste recycled to the Environmental Management Division on a quarterly basis in accordance with Chapter 12, Solid Waste Recycling..
- c. Pursue opportunities to decrease potable, industrial and irrigation water use on site as required by EO 13834.
- d. Report, quarterly, the following to EMD:
 - (1) All quantities of construction and demolition solid waste recycled
 - (2) Data for water and energy usage

15.3.5 Ames Exchange shall:

- a. Ensure food service ware supply purchases and janitorial supplies and services purchases give preference to designated recycled content, EPA CPG, Safer Choice and USDA BioPreferred Designation Items to the extent practicable.

b. Report all designated recycled content, Safer Choice and designated biobased purchases to the Environmental Management Division as requested.

15.3.6 Chemical Users shall:

- a. Track and record chemical purchases, usage, and disposal.
- b. Utilize Ames Chemical Exchange to reduce chemical waste.
- c. Report chemical usage amounts to the Environmental Management Division annually and upon request.

15.3.7 Contracting Officer's Representatives shall:

- a. Report toxic chemical usage for the Toxics Release Inventory (TRI) to the Environmental Management Division
- b. Implement the Sustainable Acquisition Program. Contracting Officer's Representatives will review contract environmental performance and sustainability factor terms and conditions to ensure:
 - (1) that contract purchases meet or exceed the recycled material content level requirements in the Environmental Protection Agency (EPA) Comprehensive Procurement Guidelines (CPG).
 - (2) procurement preference is provided for items designated by United States Department of Agriculture (USDA) BioPreferred Program.

Note: Biobased purchasing requirements are detailed throughout the Federal Acquisition Regulation including acquisition planning, mandatory purchasing by purchase card, source selection, mandatory contract clauses, and general policy and provisions. A list of designated items that require reporting can be obtained from the EMD.

- (3) that contractors purchasing any amount of the items listed for required reporting that do not meet recycled or biobased content requirements complete and submit a Sustainable Acquisition Request for Waiver Form (NF 1707), as required in NPR 8530.1.
- (4) that quantities of annual purchases of Designated Items on EPA CPG and USDA BioPreferred lists are reported to the Environmental Management Division.
- (5) that contract purchases consider sustainable products and services identified by EPA programs including the Significant New Alternatives Policy (SNAP); Energy Star; Safer Choice; and SmartWay.
- c. Utilize Ames Chemical Exchange (ACE).
- d. Ensure contractors consult the ACE inventory prior to making chemical purchases to determine if the request can be filled from available stock.
- e. Ensure contractors follow the procedure for retrieving a chemical and contact EMD.
- f. Ensure contractors add all re-usable chemicals to the ACE inventory.
- g. Manage use of ODS and high GWP substances to limit unplanned releases.
- h. Ensure that contractors minimize ODS use.
- i. Report annual ODS usage to the EMD.

15.3.8 All Personnel shall:

- a. Minimize hazardous and solid waste generation through source reduction to the maximum extent practicable per EO 13834 and the Pollution Prevention Act.
- b. Practice pollution prevention whenever possible consistent with cost effectiveness, accessibility and performance. Appendix C.4 lists example practices for pollution prevention.
- c. Purchase and use products that meet or exceed EPA's CPG minimum recycled/recovered materials content where practicable. Refer to EPA's CPG list of designated items and before purchasing supplies, materials, and equipment.
- d. Purchase and use products that meet or exceed USDA's minimum biobased content listed in the BioPreferred Item Designations list where practicable.
- e. Submit a Sustainable Acquisition Request for Waiver (NF 1707) as required in NPR 8530.1 to the Environmental Management Division for purchases that do not meet EPA's CPG or USDA's BioPreferred Program minimum recycled or biobased content requirements.
- f. Purchase and use products and services designated in the EPA Safer Choice, WaterSense, Energy Star, and Smart Way program, when practicable.
- g. Advance sustainable acquisition to ensure that new contract actions, including task and delivery orders, contain requirements for products and services that are energy efficient, water efficient, biobased, environmentally preferable, or non-ozone depleting or contain recycled content or non-toxic or less toxic alternatives, where such products and services meet performance requirements of EO 13834.
- h. Ensure that 95 percent of acquisition of supplies and services (including construction) require that the products are: Energy-efficient per the Energy Policy Act of 2005/Energy Independence and Security Act of 2007 (ENERGY STAR® or Federal Energy Management Program (FEMP)-designated); Water-efficient; Biobased; Environmentally preferable (e.g., EPEAT®-registered, or non-toxic or less toxic alternatives); Non-ozone depleting; and/or made with recovered materials in accordance with Federal Acquisition Regulation (FAR), Part 23.

15.4 Requirements

15.4.1 Toxic Release Inventory Reporting

15.4.1.1 The Environmental Management Division reports chemical release amounts for each TRI listed chemical and chemical category used in excess of the regulatory threshold annually to the Environmental Protection Agency (EPA) in accordance with EO 13834 Implementing Instructions. Chemical use amounts for NASA Ames Research Center ARC will be determined from information supplied by divisions and chemical users.

15.4.1.2 All chemical usage amounts will be reported to the Environmental Management Division, annually. See Appendix C.4 for examples of reportable uses specific to TRI at ARC. See Chapters 4 and 6, EPCRA and Hazardous Materials, for more information on TRI chemicals.

15.4.2 Regulatory Reporting Thresholds

15.4.2.1 The Environmental Management Division reports chemical release amounts for each TRI chemical and chemical category that exceeds the reporting threshold (Note: the following thresholds do not apply to TRI Persistent, Bioaccumulative, and Toxic (PBT) chemicals):

Chemical Use	Regulatory Reporting Threshold (lb.)
Manufacture	25,000
Process	25,000
“Otherwise Use”	10,000

15.4.2.2 TRI PBT chemicals have lower thresholds specific to each TRI PBT chemical. In recent years at Ames, mercury and mercury compounds and lead and lead compounds have been the PBTs closest to their thresholds. These thresholds are 10 pounds for mercury and mercury compounds and 100 pounds for lead and lead compounds. Refer to Appendix C.4 for TRI PBT Chemical Regulatory Reporting Thresholds.

15.4.3 Threshold Determinations

15.4.3.1 Thresholds apply to the total quantity of a given TRI chemical used in one year throughout ARC. If the chemical is a constituent of a product, the threshold applies to the amount of the chemical in the product, not the entire product quantity. If a listed TRI Chemical exceeds a regulatory reporting threshold, then ARC will be required to report the amount actually released (e.g., emitted to the air, shipped off-site). The amount released will be a best engineering judgment unless records/monitoring determine otherwise.

15.4.4 Exemptions

15.4.4.1 Some chemical use is exempt from the TRI threshold determination. Exemptions used in the last several years at ARC include the article, ancillary vehicle maintenance, laboratory research (not included in section 15.4.5), and de minimis exemptions. Other exemptions apply to TRI chemicals used for routine janitorial/facilities maintenance, transportation of EPCRA section 313 chemicals, personal use, and TRI chemicals that are structural components. Determining where and how these exemptions are applicable to activities at ARC is complex. The Environmental Management Division may request chemical usage amounts from any division regardless of activity exemptions for Federal, State, and local reporting requirements. Appendix C.4 provides more detail on TRI exemptions.

15.4.5 Reportable NASA Laboratory Activities

15.4.5.1 Releases of toxic chemicals from the following NASA “laboratory” activities must be reported:

- a. Pilot scale tests (i.e., tests that use greater than 1,000 pounds per year of a regulated chemical);
- b. Tests of full-scale models, or of parts that will be installed on rockets, aircraft, shuttle, etc.;
- c. Photo developing;
- d. Manufacturing components for other laboratories or NASA projects;
- e. Maintenance operations that support research and development (R&D) facilities (e.g., maintenance of heating ventilation and air conditioning (HVAC) and wind tunnel cooling towers).

15.4.6 Sustainable Acquisition

15.4.6.1 Purchasers shall follow EPA Guidelines for Recycled Material Purchases.

15.4.6.2 Purchasers should consult the EPA Comprehensive Procurement Guidelines (CPG) before ordering or purchasing items.

15.4.6.3 Purchasers shall purchase items that meet or exceed EPA's CPG minimum recommended recycled or recovered content levels. The following item categories are designated by EPA CPG as available with recycled content and shall be purchased with recycled content:

- a. Paper and paper products;
- b. Non-paper office products;
- c. Vehicular products;
- d. Construction products;
- e. Transportation products;
- f. Park and recreation products; and
- g. Landscaping products.

15.4.6.4 Items listed in the EPA CPG and the BioPreferred program, or produced using virgin materials and purchased for site projects, must be quantified separately as required for reporting to NASA Headquarters through the Environmental Management Division. Purchasers must obtain a list of items that require reporting from the EMD. The following information may be needed for reporting:

- a. Item purchased.
- b. Whether the item is composed of recycled, biobased, or virgin materials.
- c. Quantity of item purchased.
- d. Cost per unit or total cost of items purchased.
- e. Explanation for not purchasing item with recycled or biobased content.
- f. Whether a waiver was granted by EMD.

15.4.7 Sustainable Products and Services Identified by EPA or USDA Programs

15.4.7.1 To the maximum extent practicable, products and services identified by the EPA Safer Choice, WaterSense, Energy Star, SmartWay, and SNAP programs, should be purchased.

15.4.7.2 USDA BioPreferred Designation Items Purchases

15.4.7.3 Purchasers should consult USDA BioPreferred Program Proposed and Final Regulations before purchasing or ordering items and shall purchase items that meet or exceed USDA BioPreferred Program's minimum biobased content when practicable.

15.4.8 Purchasers of designated items that do not meet EPA's CPG or USDA's BioPreferred Program minimum recycled or biobased content requirements must submit a Sustainable Acquisition Request for Waiver (NF 1707) as required in NPR 8530.1 to the Environmental Management Division for review and approval or denial of the request.

15.4.8.1 Designated Item purchases through GSA Federal Supply Service's environmental products catalogs will automatically meet EPA's standards. Purchases through GSA are not reported to the Environmental Management Division.

15.4.9 Ames Chemical Exchange (ACE)

15.4.9.1 Purchasing a Chemical: To promote the use of available materials, employees purchasing chemicals shall:

- a. Check the ACE Inventory for product availability.
- b. Use chemicals stocked in ACE before purchasing new chemicals.
- c. Submit a Form RC (Appendix C.4.3) to request retrieval of items in ACE.
- d. Order the smallest container size available and practicable for the intended use. Do not purchase larger volumes of chemicals for perceived economic value. Disposal costs of any unused material can offset any savings achieved by purchasing in bulk.

15.4.9.2 Retrieving a Chemical

- a. Scan the inventory. Obtain a Form RC and note which item(s) you want.
- b. Submit the completed Form RC to the ACE Coordinator at M/S T20G-4. Items will be delivered within 2 working days from receipt of request to the location specified by the requester on Form RC.

15.4.9.3 Donating a Chemical

- a. Obtain Form ARC-749 and check the box labeled “Reuse” under the column heading “Handling Instructions.”
- b. Submit completed forms to the ACE Coordinator at M/S T20G-4.
- c. The items will be picked up and placed in the ACE inventory.
- d. The ACE coordinator will update the inventory according to the information submitted.

Note: The ACE Coordinator may reject donated chemicals. Unusable chemicals will be treated as hazardous waste and disposed in accordance with Hazardous Waste Management, Chapter 7

15.4.9.4 Reusable Materials include:

- a. Unopened laboratory reagents.
- b. Original intact, sealable containers.
- c. Solid materials, which are pourable and not clumpy.
- d. Liquids, which neither are solidified nor exhibit abnormal phase separations.
- e. Liquids which do not show signs of crystallization, crusting, or discoloration.

15.4.9.5 Disposal of Non-Reusable Materials

- a. Chemicals with no reuse potential can be disposed by submitting a Form ARC-749 to the Environmental Management Division (see Hazardous Waste Chapter for more information).

15.4.10 Ozone Depleting Substances (ODS) and High Global Warming Potential (GWP) Substances

15.4.10.1 Purchasing and Contract Specifications: Divisions requesting to purchase ODSs or high GWP substances or products that may contain them shall:

- a. Ensure employees and contractors do not purchase or specify for purchase products that contain ozone depleting substances, where practicable.
- b. All proposed purchases of ODSs or equipment, which use ODSs, must be approved by the Environmental Management Division. Approval will only be granted for those applications which are mission-critical and have NASA Headquarters approval.
- c. Specify in contracts a requirement for the use of acceptable alternatives to ODSs, when ODS chemicals may be used in the duration of the contract.
- d. Consult list of regulated ODSs (see applicable document List of Ozone Depleting Substances (ODS)) and product literature from the manufacturer (e.g., Safety Data Sheets (SDS)) to determine if products to be purchased contain regulated substances, to ensure compliance with the above.
- e. Where practicable, purchase ODS and high GWP substances alternatives in accordance with Section 612(c) of the Clean Air Act.

15.4.10.2 ODS Usage reporting: Users of Class I and Class II ozone depleting substances must provide the following information for each Class I and Class II ODS purchased, used, stored or recycled each fiscal year (FY) to the EMD as requested:

- a. Quantity purchased (in pounds);
 - b. Container type (bulk, cylinder, drum, other);
 - c. Cost;
 - d. Quantity stored;
 - e. Total quantity used;
 - f. Quantity recycled;
 - g. Quantity recovered; and
 - h. Type of use (solvent, cleaner, coolant, lubricant, fire, suppression, other).

15.4.11 Recycling

15.4.11.1 Purchasing and Contract Specifications:

- a. Consult the EMD to specify in contracts a requirement to recycle hazardous waste when applicable.
- b. Consult the EMD to specify in contracts a requirement to divert non- construction and demolition solid waste including organics, and construction and demolition solid waste as required under EO 13834.

15.4.11.2 Recycling Report:

- a. When requested, report the following information for hazardous materials recycled on-site each calendar year to the Environmental Management Division:
 - (1) Type of material
 - (2) Quantity recovered
 - (3) Quantity recycled

b. When requested, report the following information for non-hazardous solid waste including construction and demolition and non-construction and demolition waste streams generated on-site in each FY to the EMD:

- (1) Type of waste
- (2) Total quantity for each type of waste generated
- (3) Total quantity of each type of waste recycled on-site and off-site
- (4) Total quantity of waste disposed to landfill.

15.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
Request for Waiver	EMD Sustainable Lead	5 yr. minimum	EMD Network Server, P2 Files
Form RC	EMD Hazardous Waste Lead	5 yr. minimum	EMD Network Server
Form A (ARC-749)	EMD Hazardous Waste Lead	5 yr. minimum	EMD website
Recycling and Sustainable Acquisition Report	EMD Sustainability Lead	Delete Local Copies 6 yr. after report	EMD Network Server, Environmental Document Library
EPCRA 313 Toxic Release Inventory Report	EMD Compliance Lead	Delete Local Copies 6 yr. after report	EMD Network Server, Environmental Document Library
Ozone Depleting Substances Report	EMD Compliance Lead	Delete Local Copies 6 yr. after report	EMD Network Server, Environmental Document Library

CHAPTER 16 TOXIC GAS MANAGEMENT REQUIREMENTS

16.1 Applicable Documents

- a. Santa Clara County Hazardous Material Storage Ordinance, Santa Clara County Code of Ordinances, Title B, Division B11, Chapter XIII⁷⁷
- b. Santa Clara County Toxic Gas Ordinance, Title B, Division B11, Chapter XIV⁷⁸
- c. Common Toxic Gases as Defined by the Toxic Gas Ordinance and California Fire Code, UN-015.⁷⁹
- d. Toxic Gas Ordinance: Laboratory and Research Facilities Standard for Limited-Use Compliance, UN-027.⁸⁰

16.2 Personnel Training

16.2.1 At a minimum, Toxic gas users shall take Compressed Gas Safety (ARC-001-06), Hazardous Waste, Environmental & Spill Response Essentials (ARC-002-03), and HAZCOM 2012 for Chemical Users, (ARC-003-03). In addition, Toxic gas users will take any required annual refreshers.

16.2.2 For specific training requirements and regulatory references, refer to the training needs summary in NASA Ames Research Center Safety, Health and Environmental Training Catalog. Class schedule information is available at <https://q.arc.nasa.gov/content/training>

16.3 Responsibilities

16.3.1 **Environmental Management Division** shall:

- a. Provide specific permit conditions (administrative and engineering controls) for each permit and provide consultation services to the toxic gas user, and line management.
- b. Implement, maintain, and monitor the toxic gas program including issuance of Toxic Gas Use permits.
- c. Maintain the official file of any permits and forward copies of any correspondence and permits to stakeholders.
- d. Review plans and drawings related to storage and handling of toxic gas for new construction, maintenance, or remodeling to determine compliance with applicable regulations.
- e. Obtain permits specific to Toxic Gases (TG) from County of Santa Clara and pay permit fees to the County. Coordinate County inspections as needed and prepare and submit updated hazardous materials business plans to local agencies.
- f. Perform facility surveys annually to determine compliance with the Toxic Gas Use permit conditions. Assist users with maintaining compliant status.
- g. Report suspected leaks to Santa Clara County and BAAQMD.

⁷⁷https://library.municode.com/ca/santa_clara_county/codes/code_of_ordinances?nodeId=TITBRE_DIVB11ENHE_CHXIIIH_AMAST

⁷⁸https://library.municode.com/ca/santa_clara_county/codes/code_of_ordinances?nodeId=TITBRE_DIVB11ENHE_CHXIVT_OGAST

⁷⁹ UN-015: <http://unidocs.org/hazmat/gases/un-015.pdf>

⁸⁰ UN-027: <http://unidocs.org/hazmat/gases/un-027.pdf>

- h. Ensure leak testing of cylinders is performed by the user upon delivery and prior to removal from ARC and maintain records of leak tests performed.
- i. Maintain records of leak test procedures, deliveries, regulatory inspections, and internal audits.
- j. Maintain set of keys for toxic gas cabinets.
- k. Facilitate the disposal of cylinders offsite.
- l. Ensure quantities are in compliance with Environmental Justice Implementation Plan.
- m. Review the new project information fact sheet to determine toxic gas permit requirements and obtain additional information from user as needed.

16.3.2 Occupational Safety, Health, and Medical Service Division shall:

- a. Conduct industrial hygiene review of written standard operating procedures (SOPs), experiment plans, and worksites for operations with regulated gases, and issue project authorizations for regulated and exempt operations with toxic gas and ensure administrative and engineering controls are sufficient for each operation.
- b. Conduct testing to ensure that the hoods and gas cabinets and other exhausted enclosures meet the minimum requirements for safe operations.
- c. Perform calculations of TG to determine safe operations and worst-case release scenarios.

16.3.3 System Safety and Mission Assurance Division shall:

- a. Review and approve specifications, drawings, and plans for equipment with pressurized toxic gas.
- b. Review and approve plans, specifications, and parts for pressurized systems using toxic gas.

16.3.4 Logistics and Documentation Services Division shall:

- a. Prepare shipping documents for shipment of gas cylinders back to manufacturer.
- b. Notify toxic gas user when toxic gas cylinders arrive at N255 facility so that a leak test can be conducted immediately upon delivery to the user.

16.3.5 Facilities Engineering Branch shall:

Prepare design and construction through the ARC Construction Permit Review Board for new toxic gas installations and revisions to existing systems.

16.3.6 Plant Engineering Branch shall:

- a. Conduct annual maintenance and quarterly calibration of gas sensors, controls, and associated toxic gas equipment, update maintenance and calibration records, and send a copy of the records to the Environmental Management Division.
- b. Arrange for the maintenance activities of all toxic gas systems and maintain the records of maintenance for at least three years.

16.3.7 Protective Services Office shall:

- a. Maintain a supply of self-contained breathing apparatuses and other spill response equipment as needed for emergency response for incident related to toxic gas.
- b. Maintain master key to the lock boxes located outside the laboratories.

c. Conduct drills per the Toxic Gas Ordinance, if requested by EMD.

16.3.8 Line Management shall:

a. Ensure sufficient resources to implement administrative and engineering controls to reduce risk to the Center and to the mission.

b. Ensure that toxic gas projects are subject to reviews and approvals specified in this Chapter and comply with the requirements of this chapter and any approvals.

c. Ensure gases are purchased only after a toxic gas storage permit has been received from the Environmental Management Division and all permit conditions are met.

d. Have access to records and keys to the toxic gas lock box and provide access to lab and gas cabinet in the absence of project personnel.

16.3.9 Toxic Gas users shall:

a. Acquire, use, and store toxic gases in a safe manner with all prescribed administrative and engineering controls to reduce the risk to the Center.

b. Only purchase toxic gases after issuance of the Toxic Gas storage permit and after meeting all permit conditions.

c. Consult with the Environmental Management Division prior to (minimum two months) any new use of a toxic gas.

Note: Any project using a regulated toxic gas may be required to use a toxic gas cabinet and if that project is not located in an existing toxic gas area this may require a lead-time of two years. Ensure that vendors will accept return of the used gas cylinder/lecture bottle.

d. Inform vendors that they shall mark shipping papers with:

(1) Requestor name and phone number;

(2) Toxic gas cabinet location (include building, room number, and cabinet number); and

(3) Purchase Order number.

e. Obtain a current Safety Data Sheet (SDS) from the vendor with every order of gases delivered.

f. Inform the Environmental Management Division of the date and time of delivery. The purchaser or designated alternate shall be present to receive the gas.

g. Include all toxic gas on the ARC hazardous material inventory and keep the inventory current.

h. Maintain and use the appropriate personal protective equipment for the specific materials used. Refer to APR 8715.1, Chapters 2, 6, and 28 for more specific details regarding personal protective equipment and Chapter 44 for compressed gas cylinder safety requirements.

i. Conduct routine inspections of toxic gases, and maintain records of the inspections in accordance with Hazardous Materials Management, Chapter 6.

j. Conduct leak testing immediately upon delivery and again immediately prior to departure of toxic gas cylinders from facilities. Testing methods must be approved by EMD in accordance with nationally

recognized industry standards and practices, (e.g. use Snoop®). Appropriate remedial action must be immediately undertaken when leaks are detected.

k. Maintain a secure environment in the work area in order to prevent unauthorized access to toxic gases.

l. Return unused toxic gases to the vendor on a bill of lading or request assistance from the Environmental Management Division to dispose of the toxic gases as hazardous waste when toxic gases are no longer required.

16.4 Requirements

16.4.1 Maintain inventory of toxic gases identified in Santa Clara County Toxic Gas Ordinance.

16.4.2 All uses of toxic gases shall be reviewed and approved by EMD prior to purchase of the gas.

16.4.3 All uses of toxic gases in quantities exceeding the “Exempt” amount shall be permitted through the County of Santa Clara.

16.4.4 All toxic gas users shall maintain an accurate and up-to-date inventory of all toxic gases in their hazardous Material Inventory.

16.4.5 Leak testing shall be conducted on all cylinders upon delivery and prior to disposal or departure from center.

16.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
Hazardous Materials Storage Permits	Hazardous Materials Program Manager, EMD	Destroy after second reissuance of the permit or 10 years after permit expires or is cancelled.	All chemical storage locations, CERs
Quarterly Toxic Gas Inventory Update	Hazardous Materials Program Manager, EMD	3 years after chemical is no longer onsite	Network Server, Environmental Document Library,

16.6 Reports

Quarterly Toxic Gas Inventory Update				
Frequency:	Quarterly	Reported To:	NASA Ames Research Center	
FY or CY Data	NA	Required By:	Environmental Management Division	
Report Due:	Quarterly			
Internally Report To:	Hazardous Materials Program Manager			
Data Source	Primary Contact	Contact(s) For Past Reports	Data Required	Units
<i>Facility Service Managers</i>	Various contacts	Hazardous Materials Specialist	Type of Gas, Weight, Volume, Storage Area	NA

CHAPTER 17 WETLANDS AND FLOODPLAINS

17.1 Applicable Documents and Forms

- a. Coastal Zone Management Act (CZMA) of 1972, 16 U.S.C. §§ 1451-1464.
- b. Clean Water Act, Sections 401, 402, and 404, 33 U.S.C. §1251 et seq.
- c. McAteer-Petris Act, Cal. Gov't Code §§ 66600-66684 (1996).
- d. National Flood Insurance Act of 1968 and Flood Disaster Protection Act, 42 U.S.C. § 4001 et seq.
- e. Regulatory Programs of the Corps of Engineers, 33 CFR Parts 320 to 334.
- f. Floodplain Management, E.O. 11988.
- g. Protection of Wetlands, E.O. 11990.
- h. California Code of Regulations (CCR) Title 14 Division 5 San Francisco Bay Conservation and Development Commission⁸¹
- i. South San Francisco Bay Shoreline Phase 1 Study – Final Integrated Document. U.S. Army Corps of Engineers. September 2015⁸²
- j. NASA Graphic Information Systems (GIS) 100-year and 500-year Flood Zones, 2015 (Appendix C.5.1).
- k. Ames Research Wetlands, United States Army Corps of Engineers (USACE) San Francisco District Regulatory Branch, 2009 (Appendix C.5.2).

17.2 Personnel Training

17.2.1 The ARC Wetland and Floodplain training is required for all Environmental Management Division personnel. Training is required for personnel responsible for reviewing or authorizing programs, projects, or activities that require any work outdoors, or for all proponents of proposed programs, projects, and activities that require any work outdoors.

17.2.2 Training shall be completed at least once every 3 years and be provided by EMD on wetlands and floodplains, their locations at ARC, policy and regulations, and procedures for ARC personnel.

17.3 Responsibilities

17.3.1 **Environmental Management Division** shall:

- a. Maintain records of all wetland delineations and maps of wetlands and floodplains at ARC, including those prepared in accordance with the Coastal Zone Management Act, the Clean Water Act, the McAteer-Petris Act, and National Flood Insurance Act.
- b. Ensure updated maps are available for NASA personnel.
- c. Develop and provide ARC-specific training regarding wetlands and floodplains.

⁸¹[https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=IE70675C0D48611DEBC02831C6D6C108E&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=IE70675C0D48611DEBC02831C6D6C108E&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))

⁸²<https://www.spn.usace.army.mil/Portals/68/docs/FOIA%20Hot%20Topic%20Docs/SSF%20Bay%20Shoreline%20Study/Final%20Shoreline%20Main%20Report.pdf>

- d. Evaluate proposed actions for their effects to wetlands and floodplains as required under NEPA and EO 11988 and 11990.
- e. Determine whether any permitting or consultation with stakeholders (e.g., San Francisco Bay Conservation and Development Commission) associated with wetlands and floodplains is necessary.
- f. Prepare and submit to the appropriate agency (e.g. U.S Army Corps of Engineers under 33 CFR, the California Department of Fish and Wildlife, and/or Bay Conservation and Development Commission (BCDC) under 14 CCR Division 5), permit applications, and associated studies (e.g. wetland delineations) for work in wetlands, waters over which outside agencies have jurisdictions, or in floodplains.
- g. Act as the primary point of contact for all regulatory agency interface and correspondence concerning wetlands and floodplains.
- h. Monitor permitted activities in and around wetlands and floodplains to ensure compliance with permits and this Chapter.

17.3.2 Facilities Engineering and Real Property Division (Code JC) shall:

- a. Ensure that all construction, maintenance, and operational activities avoid, to the extent feasible, wetland areas.
- b. Coordinate with the Environmental Management Division during project planning and initial review to determine whether wetlands or floodplains may be affected from the activity.
- c. Notify the Environmental Management Division as soon as possible if any changes occur to a project located in or adjacent to wetlands or floodplains.
- d. Avoid the use of pesticides, rodenticides, and/or herbicides in wetland areas.
- e. Coordinate with the Environmental Management Division prior to any construction, maintenance, or operational activities that occurs within, disturbs, or places fill in wetland areas.
- f. Work with the Environmental Management Division to prepare and fund studies associated with required permits from regulatory agencies (USACE, United States Fish and Wildlife Service [USFWS], BCDC, etc.)
- g. Ensure that requirements stipulated in project-specific permits and mitigation measures from environmental analysis pertaining to wetlands and floodplains are incorporated into the project design and contracts and are implemented.

17.3.3 Project Proponents shall:

- a. Ensure that all construction projects comply with the requirements of permits and approvals or required mitigation measures that pertain to wetlands and floodplain protection.
- b. Coordinate with the Environmental Management Division during project planning and initial review to determine whether wetlands or floodplains would be affected from the activity.
- c. Conduct and/or fund surveys and studies for wetlands or floodplains, as required by applicable laws, prior to conducting activities that could affect them.

17.3.4 Tenants shall:

- a. Follow all responsibilities as explained in this chapter when Tenant is also a Project Proponent.

b. Conduct, or reimburse NASA for the costs of conducting, surveys for wetlands or floodplains prior to conducting activities that could affect these areas.

17.4 Requirements

17.4.1 Contact the Environmental Management Division when planning for work in areas that flood, contain vegetation, or convey or contain water.

17.4.2 Consider all methods for avoiding impacts to wetlands and floodplains during project planning.

17.4.3 If activities must occur in wetland or floodplains (see Appendix C.5), work with the Environmental Management Division to determine whether permits from the California Department of Fish and Wildlife or the U.S. Army Corps of Engineers is required. If required, provide support for the preparation of permit application materials, including funding necessary for contractor assistance.

17.4.4 Incorporate all permit requirements into project design and implementation.

17.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
NASA GIS 100-year and 500-year Flood Zones, 2015 (see Appendix C.5)	Center NEPA Program Manager / Natural Resources Manager	Maintain as long as relevant and 5 years thereafter.	Administrative Record of the Ames Development Plan Final Programmatic Environmental Impact Statement, Part of the Environmental Resources Document, EMD Files
United States Army Corps of Engineers (USACE) Final Jurisdictional Determination, 2009 (see Appendix C.5)	Center NEPA Program Manager / Natural Resources Manager	Maintain indefinitely.	Administrative Record of the Ames Development Plan Final Programmatic Environmental Impact Statement, Part of the Environmental Resources Document, EMD Files
Correspondence with agencies when seeking their concurrence or approval of a permit.	Center NEPA Manager / Natural Resources Manager	Maintain indefinitely	Environmental Review Files for specific projects, EMDJFiles

CHAPTER 18 WILDLIFE AND VEGETATION

18.1 Applicable Documents and Forms

- a. Bald and Golden Eagle Protection Act, 16 U.S.C. § 668 et seq.
- b. Endangered Species Act (ESA), 16 U.S.C. § 1531 et seq.
- c. Migratory Bird Treaty Act, 16 U.S.C. 703-712.
- d. Coastal Zone Management Act, 16 U.S.C. § 1451 et seq..
- e. Department of the Interior, Wildlife and Fisheries, 50 CFR. et seq.
- f. Environmental Effects Abroad of Major Federal Actions, E.O. 12114.
- g. Invasive Species, E.O. 13112.
- h. Responsibilities of Federal Agencies to Protect Migratory Birds, E.O. 13186.
- i. NASA Ames Research Center Western Pond Turtle Management Plan⁸³
- j. NASA Ames Development Plan Programmatic Environmental Impact Statement (July 2002) (NADP EIS)⁸⁴
- k. NASA Ames Development Plan Record of Decision (November 20, 2002) (ROD)⁸⁵.
- l. Mitigation Implementation and Management Plan (November 20, 2002) (MIMP)⁸⁶.
- m. California Endangered Species Act of 1984, California Fish and Game Code Sections 86 and 2050-2085⁸⁷
- n. California Native Plant Protection Act, California Fish and Game Code Section 1900 et seq.⁸⁸

18.2 Personnel Training and Certification

18.2.1 ARC Wildlife Awareness training shall consist of information regarding wildlife that may be found at ARC, procedures for working in open areas where wildlife may be present, and legal requirements.

18.2.2 ARC Wildlife Awareness training is required for:

- (1) Environmental Management Division personnel.
- (2) Personnel responsible for reviewing or authorizing programs, projects and activities.
- (3) Managers of proposed programs, projects, and activities (“Project Proponents”).

⁸³ See EMD for copy

⁸⁴ <https://www.nasa.gov/centers/ames/researchpark/documents/index.html>

⁸⁵ https://www.nasa.gov/sites/default/files/atoms/files/736180main_rodsigned.pdf

⁸⁶ https://www.nasa.gov/sites/default/files/atoms/files/578520main_mimp28229_0.pdf

⁸⁷ https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=FGC&division=3.&title=&part=&chapter=1.5.&article=1

⁸⁸ https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=FGC&division=2.&title=&part=&chapter=10.&article=

(4) Persons who primarily work in areas where they may come into contact with or affect wildlife or their habitat (e.g., emergency responders, Protective Services personnel, flight operations personnel, facility construction and maintenance workers).

18.3 Responsibilities

18.3.1 **Environmental Management Division** shall:

- a. Participate in agency-wide natural resource working groups, such as NASA's Natural Resource Council, on behalf of ARC.
- b. Maintain an accurate inventory of all ARC habitat areas types.
- c. Maintain an accurate inventory of burrows occupied by burrowing owls, their satellite burrows, and recently occupied burrows at ARC throughout the year and make this information readily accessible to the Center.
- d. Carry out annual burrowing owl breeding season surveys and produce an annual ecology report, consistent with the requirements of the NADP EIS, MIMP and ROD.
- e. Provide guidance to Project Proponents and the Facilities Engineering and Real Property Management Division regarding compliance with E.O. 13114, Invasive Species.
- f. Carry out requirements described in E.O. 13186, Responsibilities of Federal Agencies to Protect Migratory Birds.
- g. Incorporate the effects to wildlife, plants, and habitat, including areas covered by the Coastal Zone Management Act, into the environmental review that occurs pursuant to NEPA and E.O. 12114.
- h. Oversee the development and implementation of wildlife, plant, and habitat conservation and protection measures, as needed, to comply with applicable laws and MIMP and ROD.
- i. Implement adaptive management for burrowing owl by using information obtained during environmental review for projects, site specific surveys, and other data collection methods to evaluate and modify burrowing owl management.
- j. Act as the primary point of contact during consultations with wildlife agencies (United States Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and National Marine Fisheries Service).
- k. Prepare documentation in support of depredation, take, or other permits, in accordance with the applicable law (e.g., Wildlife and Fisheries, 50 C.F.R. et seq, Section 7 of ESA, etc.).
- l. Determine the need for biological studies and ensure appropriate studies are conducted to inform activities.
- m. Conduct site-specific surveys for special status species and recommend measures to prevent or reduce negative affects to the environmental resource. Measures may include:
 - (1) Establishing and marking buffer zones around special status species and habitat when necessary.
 - (2) Assisting in relocation efforts for burrowing owls when appropriate.
- n. Manage predators' populations consistent with the NADP EIS, MIMP, and ROD to reduce negative impacts on special status species, including:

- (1) Removing selected predators of endangered, threatened, and other special status species.
 - (2) Educating personnel about the importance of not feeding wildlife.
 - (3) Studying the effects of predators on special status species.
- o. In coordination with those proposing squirrel control, review and ensure implementation of site-specific burrowing owl protection plan for each instance of large-scale squirrel eradication, as described in this chapter.
 - p. Provide personnel at NASA ARC with training.
 - q. Review depredation and salvage permits when submitted by NASA Project Proponents, tenants, or other onsite partners.
 - r. Provide wildlife control services including responses to wildlife trouble calls from Dispatch or the Trouble Desk.
 - s. Manage onsite natural resources in a manner that facilitates the NASA mission and is consistent with applicable laws.

18.3.2 Facilities Engineering and Real Property Management Division shall:

- a. Conduct operations and activities to ensure that they will not impact special status species.
- b. Avoid using pesticides or herbicides within buffer zones established for the protection of special status species and within 50 feet of Coastal Salt Marsh habitat.
- c. Submit to EMD the Safety Data Sheets for pesticides and herbicides that are proposed for use and obtain approval from the Environmental Management Division prior to using them.
- d. Submit requests and obtain approval from the Environmental Management Division prior to any disking or grading of open space areas.
- e. Ensure that areas identified as Burrowing Owl Habitat Preserves have vegetation maintained at the optimal height for burrowing owl habitat as identified in NASA's burrowing owl management plans.
- f. Coordinate with the Environmental Management Division early in the planning processes for all actions, including Master Plan updates, maintenance activities, and new construction to determine if special status species or their habitat would be impacted by proposed actions and to understand what studies or surveys may be required by the proposed actions.
- g. Implement impact avoidance or mitigation measures identified by the Environmental Management Division.
- h. Conduct no squirrel control in Burrowing Owl Habitat Preserves and other areas identified as critical to burrowing owls.
- i. With the Environmental Management Division, prepare and implement a detailed owl protection plan for ground squirrel abatement that:
 - (1) Describe squirrel control methods and prioritize use of methods that result in the least amount of harm to environmental resources. This includes reducing the risk of primary and secondary poisoning of non-target species, including owls.
 - (2) Describes thorough owl survey methods that will be conducted less than two weeks before the squirrel control and during the use of squirrel control methods.

(3) Describes impact avoidance measures and mitigation measures to avoid or reduce impacts to burrowing owls.

- j. Coordinate with the Environmental Management Division concerning USFWS, United States Army Corps of Engineer (USACE), and CDFW permits.
- k. Notify the Environmental Management Division as soon as possible if any construction or project management changes occur that may affect special status species.
- l. Include funding for wildlife, plant, and/or habitat surveys or studies in project cost.

18.3.3 Project Proponents shall:

- a. Early in the planning process, contact the Environmental Management Division and review all proposed projects, programs, and activities to determine if they may occur near areas with that provide habitat for special status species (e.g., bare ground, near grassland, etc.).
- b. Discuss projects with the Environmental Management Division to understand what studies or surveys may be required and include funding for wildlife, plant, and/or habitat surveys or studies in project cost.
- c. Be familiar with requirements to avoid impacts to burrowing owls and their habitat as described in the current burrowing owl management plan and any project specific burrowing owl mitigation measures. In the event impacts may occur, contact the Environmental Management Division and consult on the details of a specific project prior to conducting the activity.
- d. Avoid planning any activity in areas designated as Burrowing Owl Habitat Preserves identified in Appendix C.6.
- e. Incorporate all feasible measures to reduce or eliminate potential impacts to burrowing owls (i.e., construction methods that produce less noise or can be done away from burrowing owls). This may include altering the magnitude, duration, and timing of disturbances.
- f. Obtain approval from the Environmental Management Division prior to conducting activities near special status species and their habitat. (The Environmental Management Division will obtain permits and approvals from regulatory agencies.)
- g. Obtain Construction Permits in accordance with APR 8829.1 and comply with permit conditions.

18.3.4 Tenants and Onsite Partners shall:

- a. Follow all responsibilities set forth in this chapter when the tenant or onsite partner is also a Project Proponent.
- b. Contact the Environmental Management Division prior to filling any burrows.
- c. Provide the Environmental Management Division thirty days advance notice prior to conducting any California ground squirrel abatement activities.
- d. Conduct no squirrel control in Burrowing Owl Habitat Preserves shown in Appendix C.6 and other burrowing owl habitat areas as specified by the Environmental Management Division wildlife biologist.
- e. Keep the Environmental Management Division updated regarding the observations of special status species and provide copies of all wildlife surveys to the Environmental Management Division.

f. Conduct, or reimburse NASA for the costs of conducting, surveys for special status species prior to activities that could affect them.

18.3.5 Office of Communication (Code DO) and any other organization conducting special events shall:

- a. Locate activities and events away from habitat for special status species, including Burrowing Owl Habitat Preserves.
- b. Consult with the Environmental Management Division for any event that will involve using outdoor space to obtain current information on location of burrowing owls and adhere to appropriate buffer distances identified by the Environmental Management Division.
- c. Install fencing and flagging and implement other measures required by EMD to mitigate adverse impacts.

18.3.6 Protective Services shall:

- a. Report abuse of animal complaints to Santa Clara County Animal Control.
- b. Coordinate with the Environmental Management Division when addressing wildlife related incidents.

18.4 Requirements

18.4.1 Incorporate the effects to wildlife, plants, and habitat into the environmental review that occurs pursuant to NEPA.

18.4.2 Comply with all laws that pertain to the protection of wildlife, plants, and their habitat as directed by EMD.

18.4.3 Maintain updated inventories of wildlife, habitat, and plant data at ARC.

18.4.4 Implement mitigation measures and requirements from the NADP EIS and MIMP and ROD.

18.4.5 Coordinate with outside agencies as needed to obtain permits and authorizations for actions over which they have jurisdiction.

18.4.6 Educate those that work or go to school at ARC are aware of wildlife, plant, and habitat management requirements.

18.5 Records

Record Name	Title of Responsible Person	Retention Requirements	Location
Project-specific surveys of natural resources	Center NEPA Program Manager / Natural Resources Manager	Maintain as long as relevant and 5 years thereafter.	Administrative Record of the Project Files, EMD Natural Resource Files
Annual Burrowing Owl Population Surveys and Final Report	Center NEPA Program Manager / Natural Resources Manager	Maintain indefinitely.	Administrative Record of the 2002 Final Programmatic Environmental Impact Statement, EMD Files
Correspondence with agencies when seeking their concurrence or approval of a permit.	Center NEPA Manager / Natural Resources Manager	Maintain indefinitely	Environmental Review Files for specific projects, EMD Files

18.6 Reports

Annual Burrowing Owl Demography Report				
Frequency:	Annual	Reported To:	NASA Ames Environmental Management Division	
FY or CY Data:	CY	Required By:	NASA Ames Development Plan Environmental Impact Statement	
Internal Report To:	Natural Resource Manager	Report Due:	September each year	
Data Source	Primary Contact	Contact Past Reports	Data Required	Units
EMD	Wildlife Specialist	Wildlife Specialist	Number of breeding owls, productivity, nest locations	Owls, Number of owls fledged

APPENDIX A. DEFINITIONS

90-day Accumulation Area	An area that may accumulate any volume of hazardous waste of any type for up to 50 days.
Abandoned	There are no plans for future reactivation. A condition in which a facility has been "walked away from" or for which all maintenance activities have been halted.
Aboveground Storage Tank (AST)	Any size of stationary storage vessel or container used for the storage of hazardous materials, including oils. Some ASTs are constructed so that they may be relocated.
Accumulation Start Date	<ol style="list-style-type: none">1. The date that any amount of HAZARDOUS WASTE is first placed in a new container. or;2. The date a HAZARDOUS MATERIALS container is emptied (check the Empty Container Decision Tree, located in Appendix C.1, to determine if it needs to be managed as hazardous waste). or;3. The date surplus chemicals in their original containers are no longer needed by anyone at Ames.
Acutely Hazardous Material	A substance that is listed on the Environmental Protection Agency (EPA) List of Extremely Hazardous Substances, 40 CFR, Part 355, Appendix A, or Santa Clara County Acutely Hazardous Materials List.
Acutely Hazardous Waste	Acutely hazardous waste is hazardous waste defined by USEPA in 40 CFR 261.33 (e) as EPA's "P-listed" hazardous waste (included in Appendix D.7). These wastes typically are toxic or reactive. Acutely hazardous waste is a federal definition, whereas extremely hazardous waste (see definition below) is a State of California definition.
Ames Chemical Exchange	The Ames Chemical Exchange (ACE) is a chemical redistribution program that promotes use of excess, unused, or unwanted chemicals. By using the ACE, organizations save money through avoided purchase and disposal costs. The ACE inventory lists available materials by chemical name and includes information such as quantities and manufacturers name, date manufactured, date in to ACE, expiration date (if applicable).
Animal Bedding	Materials used in the maintenance and care of animals that have not been in contact with infectious agents.
Animal Carcasses	Animal tissue or body parts that have not been in contact with infectious agents.

Backflow Prevention	Prevention of the reverse flow of contaminated water from a location back to the water distribution system as a result of loss of pressure in the water mains.
Biohazard Bags	Bags, typically red-colored, specifically developed for disposal of medical waste or prepackaged sharps (refer to definition of biohazard boxes). Bags must be impervious to moisture and have strength sufficient to preclude ripping, tearing, or bursting under normal condition of usage and handling. Bags shall be labeled "Biohazardous Waste" or with the word "Biohazard" and the international symbol. These bags shall not be used for biological waste that is not to be treated as medical waste.
Biohazardous Waste	<p>Waste that includes any of the following:</p> <ol style="list-style-type: none"> 1. Laboratory waste, including: <ol style="list-style-type: none"> i. Human or animal specimen cultures from medical or pathological laboratories. ii. Cultures and stocks of infectious agents from research laboratories. iii. Wastes from the production of bacteria, viruses, or the use of spores. iv. Discarded live attenuated human vaccines and discarded animal vaccines. v. Culture dishes and devices used to transfer, inoculate, and mix cultures. 2. Human surgery specimens or tissues suspected of being contaminated with infectious agents. 3. Animal parts, tissues, fluids, or carcasses suspected by the attending veterinarian of being contaminated with infectious agents. 4. Waste containing recognizable fluid blood, fluid blood products, containers, or equipment containing fluid blood or blood from animals known to be infected with highly communicable diseases. <p>Waste contaminated with excretion, exudate, or secretions from humans or animals required to be isolated to protect humans from highly communicable diseases.</p>
BioPreferred	Created by the Farm Security and Rural Investment Act of 2002, managed by the USDA to increase the purchase and use of biobased products. It designates items, or generic groupings of biobased products that are required for purchase by Federal agencies and their contractors. As a part of this process, the minimum biobased content is specified and information on the technical, health, and environmental characteristics of these products are made available on the BioPreferred Web site.

Burrowing Owl Habitat Preserve	Areas of undeveloped land at NASA ARC that have been set aside for the primary purpose of providing habitat for burrowing owls. Current preserves are shown in Appendix C.6 labeled as Burrowing Owl Nesting Habitat Preserves and PV Burrowing Owl Mitigation Area.
California Species of Special Concern	State species that are threatened and may warrant placement on the State Endangered Species list.
Categorical Exclusion (CatEx)	An exclusion from NEPA that is granted to project actions that do not individually or cumulatively have a significant effect on the environment. Note: Even though an action may be categorically excluded from the need for a formal EA or EIS, the action is not excluded from the requirement for an environmental analysis during the earliest planning phases.
Closure	<p>When a facility no longer uses or stores hazardous materials in its operations at a specific location. Two possible scenarios follow:</p> <ol style="list-style-type: none"> 1. When a facility holding hazardous materials storage permit(s) terminates its operations, a closure plan and application must be prepared and submitted to the local regulatory agency to show that steps have been taken to protect human health and the environment against the hazardous materials used at the facility. The facility will show that the hazardous materials have been removed and that there is no residual contamination remaining that may impact persons or the environment. <p style="text-align: center;">-OR-</p> <ol style="list-style-type: none"> 2. When a facility that has not been issued a hazardous materials permit but uses equipment containing hazardous materials terminates its operations, a closure plan is prepared and addresses all aspects of the facility operations that may impact human health and the environment. For example, the closure of a wind tunnel may leave lubricating oils in place to protect the equipment for potential future use. In this case, routine inspections of the facility will be performed to ensure that the lubricating oils are not leaking.
Combustible	A material with a flashpoint at or above 100 degrees F (Uniform Fire Code)
Compatibility	The chemical characteristics of a material that determine other materials with which it may or may not be safely combined.
Construction and Demolition (C&D) Debris	Waste associated with building/housing construction and includes unused and excess material generated during site excavation, site clearance construction, roadwork, and renovation activities. These

wastes may be rubble (concrete, bricks, and asphalt), wood and wood products, plaster, metals, plastics, and insulation.

Corrosive

The characteristic of a waste that renders the waste hazardous by any one of the following criteria:

1. It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5 or is capable of corroding steel (SAE 1020) at a rate > 6.35 mm (0.25 inch) per year at 55°C (130° F). Many strong acids and bases fall in this category e.g. sulfuric acid and sodium hydroxide (caustic soda).
2. It can cause destruction of living tissue or steel surfaces by chemical action according to 22 CCR 66261.22(a)(4).
3. It is a non-aqueous or non-liquid waste which, when mixed with an equal weight of water, yields a liquid which has a pH of less than or equal to 2 or greater than or equal to 12.5.

Examples of wastes which exhibit the corrosivity characteristic are:

Acids	2-(2-Aminoethoxy)ethanol
Battery fluid, acid or alkali	Benzyl dimethylamine
Butyric acid	Calcium oxide (Lime)
Caproic acid	Caustic soda
Crotonic acid	Di-n-butylamine
Ethanolamine	Ethylenediamine
Formic acid	Hydrochloric acid
Phosphoric acid	Propionic acid
Sodium hydroxide solution	Sulfuric acid

Cross Connection

The connection of a non-potable water line with a potable water line, usually enabled by backflow.

Diluting Waters

Cooling water, potable water, domestic sewage, groundwater, surface drainage, or other waters not part of an industrial process for which pretreatment limitations apply, but which are combined with industrial process wastewater prior to a monitoring point.

Discharge

Discharge includes any spilling, leaking, pumping, pouring, emitting, emptying, or dumping not authorized by permit.

Electronic Waste (E-Waste)

Any discarded electronic device including, but not limited to, monitors, computers, computer peripherals, televisions, telephones, answering machines, radios, stereo equipment, tape players/recorders, phonographs, video cassette players/recorders, compact disc players/recorders, calculators, and some appliances. An electronic device does not include any major appliance such as a

washing machine, clothes dryer, hot water heater, dehumidifier, conventional oven, microwave oven, stove, refrigerator, freezer, air conditioner, trash compactor

Empty Container

A container, or an inner liner removed from a container, which previously held a hazardous material including hazardous waste (hazardous waste includes characteristic wastes and listed wastes and any material listed as an acute hazardous waste in 40 CFR 261.31-33 or a waste which is extremely hazardous pursuant to 22 CCR 66261.110-113), is empty:

1. If the hazardous material which the container or inner liner held is pourable, no hazardous material can be poured or drained from the container or inner liner when the container or inner liner is held in any orientation (e.g., tilted, inverted, etc.).
2. If the hazardous material which the container or inner liner held is not pourable, no hazardous material remains in, or on the container or inner liner that can feasibly be removed by physical methods (excluding rinsing) which comply with applicable air pollution control laws and which are commonly employed to remove materials from that container or inner liner. Following material removal, no adhered or crusted material resulting from a buildup of successive layers or mass of solidified material shall remain on the top, bottom and sidewalls of the container.

Note: Any container which previously held an acutely hazardous waste or an extremely hazardous waste must be triple-rinsed before it meets the requirements of empty as defined above. In addition, the rinseate must be collected and managed as hazardous waste.

Environmental Assessment (EA)

A type of NEPA document that provides brief but sufficient evidence and analysis to determine whether an EIS needs to be prepared. An EA is sufficient for NEPA compliance only when all potential significant impacts have been determined to be avoided or mitigated to less than significant. An EA informs decision makers and the public of the expected effects to the environment from proposed actions.

Environmental Impact Statement (EIS)

A type of NEPA document that provides discussion of significant, and potentially significant, environmental impacts that would occur as a result of actions under consideration. An EIS is used to inform decision-makers and the public of the consequences of a proposed action. An EIS is an action-forcing device to ensure that the policies and goals of NEPA are integrated into NASA programs and actions.

Environmental Justice

Environmental justice is the fair treatment and meaningful involvement of people in Federal agency programs, policies, and activities and more specifically under EO 12989 to avoid the

disproportionately high and adverse human health and environmental effects to minority populations and low-income populations.

Environmentally
Preferable

Products or services that have a lesser or reduced adverse effect on human health and the environment when compared with competing products or services that serve the same purpose. This comparison may consider raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, or disposal of the product or service.

EPA-Designated Product

An item or category of item, designated by EPA, which can be made with recovered material, advancing the purpose of sustainable acquisition when purchased. EPA designates items in the Comprehensive Procurement Guide, which is amended periodically in the Federal Register and located in EPA's regulations at 40 CFR Part 247. The minimum-recovered content standards for EPA-designated products, and recommended practices for the procurement of such items, are published periodically in the Federal Register under the title of Recovered Materials Advisory Notices. Further defined in FAR Subpart 23.401.

Extremely Hazardous
Material

A substance or combination of substances that, if human exposure should occur, will likely result in death, disabling personal injury, or serious illness caused by the substance or combination of substances because of its quantity, concentration, or chemical characteristics. A list of these substances can be found in 40 CFR, Part 355, Appendix A,

Extremely Hazardous
Wastes

Extremely hazardous waste is defined in 22 CCR 66260.10 as any hazardous waste or mixture of hazardous wastes that, if human exposure should occur, may likely result in death, disabling personal injury, or serious illness because of its quantity, concentration, or chemical characteristics. The criteria for designating extremely hazardous wastes are given in 22 CCR 66261.110. These criteria include:

1. A waste or material with an acute oral LD50 less than or equal to 50 mg/kg; or
2. An acute dermal LD50 less than or equal to 43 mg/kg; or
3. An acute inhalation LC50 less than or equal to 100 parts per million as a gas or vapor; or
4. Contains any of the substances listed in 22 CCR 66261.24 (a)(7) at a single or combined concentration equal to or exceeding 0.1 percent by weight (Appendix D.7, Table IV); or
5. Has been shown through experience or testing that human exposure to the waste may result in death, disabling personal injury or serious illness, because of its carcinogenicity, high

acute or chronic toxicity, bioaccumulative properties, or persistence in the environment; or

6. Is water reactive.

Facility Response Plan (FRP)	Under 40 CFR 112, a Facility Response Plan (FRP) is required for any non-transportation-related onshore facility that, because of its location, could reasonably be expected to cause substantial harm to the environment by a discharge of oil or fuels.
Finding of No Significant Impact (FONSI)	A public document that reflects the agency's final decision and briefly presents the reasons why an action will not result in any significant impacts to the environment. A FONSI explains why the preparation of an EIS is unnecessary.
Floodplain	The lowland and relatively flat areas adjoining inland and coastal waters, and flood-prone areas that are subject to a 1-percent or greater chance of flooding in any given year. The base floodplain shall be used to designate the 100-year floodplain (1-percent chance floodplain). The critical action floodplain is defined as the 500-year floodplain (0.2-percent floodplain). Appendix C.5 provides a map of the 100-year and 500-year flood zones at ARC.
Garbage	All waste material that is derived in whole or in part from fruits, vegetables, meats, or other plant or animal (including poultry) material, and other refuse of any character whatsoever that has been associated with any such material (7 CFR 330.400 (b)).
Generator	Any person at ARC whose act, process or equipment produces hazardous waste.
Global Warming Potential	The Global Warming Potential was developed to allow comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of one ton of a gas will absorb over a given period of time, relative to the emissions of one ton of carbon dioxide. The larger the GWP, the more that a given gas warms the Earth compared to carbon dioxide over that time period. The time period usually used for GWPs is 100 years. GWPs provide a common unit of measure, which allows analysts to add up emissions estimates of different gases (e.g., to compile a national greenhouse gas inventory), and allows policy-makers to compare emissions-reductions opportunities across sectors and gases. See https://www3.epa.gov/climatechange/ghgemissions/gwps.html for more information.
Hazardous Material	As defined in Section 25501 of Chapter 6.95 of the California Health and Safety Code, any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include, but are not limited to,

oil, fuel, caustic and acid cleaners, mineral spirits, petroleum distillate based solvents, oil based paints, aerosol spray paints, coolants and antifreeze, solvents and cleaners containing chlorinated compounds, hazardous substances, hazardous waste, and any material which a handler has a reasonable basis for believing it would be injurious to the health and safety of persons or harmful to the environment

Hazardous Substance

Any substance listed in 40 CFR, Table 302.4

Hazardous Waste

Hazardous waste means a hazardous waste as defined in 20CCR 66261.3 Hazardous waste includes acutely hazardous waste, extremely hazardous waste, non-RCRA hazardous waste, RCRA hazardous waste, special waste and universal waste.

Ignitability

The characteristic of a waste that renders the waste hazardous by any of the following criteria:

1. It is a liquid (other than aqueous solutions with less than 24% alcohol) that has a flashpoint of < 60°C (140°F).
2. It is a non-liquid capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes, and when ignited burns vigorously and persistently.
3. It is any oxidizer as defined in 49 CFR 172.151.
4. It is any flammable compressed gas as defined in 49 CFR 173.300.
5. Examples of wastes which exhibit the ignitability characteristic are:

Acetone	Cyclopentanol
Denatured alcohol	Diesel fuel
Ethyl acetate	Ethyl ether
Furfural	Heptane
JP-8 jet fuel	Methyl propionate
Paint thinner	Piperidine
Xylene	Calcium chlorite
Hydrogen peroxide	Potassium permanganate
Acetylene	Butane
Hydrogen	Propane
Aluminum powder	Metal hydrides
Paraformaldehyde, solid	

Illicit Connection

An improper permanent connection to process water, floor drains, sinks, etc. that deliver waste water to the storm distribution system.

Inactive Facility	Any facility that has no specific and present, or near-term, program or institutional requirement. An inactive facility may be placed in a "Standby," "Mothballed," or "Abandoned" status.
Incidental Industrial Wastewater	Waste and wastewater generated from any non-routine activity. Such wastewater sources include, but are not limited to, construction dewatering, utility vault pumping, and groundwater excavation, rainwater in secondary containment, cooling tower maintenance waste streams, and boiler blowdown.
Industrial Wastewater	Waste and wastewater from any maintenance, production, manufacturing, fabrication, research, development, or processing activity, where water is used to remove waste derived from nondomestic sources from processes connected to or flowing otherwise to the sanitary sewer system.
Medical Waste	Biohazardous waste and sharps waste. Medical waste excludes: <ol style="list-style-type: none"> 1. Urine, feces, saliva, sputum, nasal secretions, sweat, tears, and vomitus that does not contain fluid blood. These fluids are medical waste if derived from humans or animals required to be isolated to protect humans from highly communicable diseases; 2. Non-biohazardous waste, including paper towels, paper products, and articles containing non-fluid blood.
Medical Waste Generator	Any person whose act or process produces medical waste.
Mixed Waste	A mixture of medical and non-medical wastes. Mixed waste is medical waste except for the following: <ol style="list-style-type: none"> 1. Mixture of medical and hazardous wastes is hazardous waste. 2. Mixture of medical and radioactive wastes is radioactive waste. Mixture of medical, hazardous, and radioactive wastes is radioactive mixed hazardous waste.
Mothballed	A condition where a facility has been deactivated and appropriate maintenance measures have been taken to prevent deterioration of its vital or essential systems. Higher first year costs would be expected because of preparations for mothballing, but future annual costs should be significantly lower due to reduced maintenance and repair requirements. Total time to deactivate and then to reactivate the facility, including the mothballed period, is expected to exceed 12 months.
NEPA Proponent	The owner of a NASA action that requires NEPA documentation. This is typically a program or project manager located within Codes J, D, R, S, or T. The NEPA proponent must be a civil servant, even when the program or project is delegated to or managed by a

contractor except when the owner of the action that NASA is considering to approve or authorize is a tenant. In that case, the NEPA proponent may be a Tenant (as described in Chapter 10).

Non-reportable Spill

A non-reportable spill is one in which oil does not escape to the environment and:

- The material will not pose a health risk to any individual in the immediate area.
- The spill can be controlled and contained with on-hand spill response materials.
- The properties of the material are well known to the person(s) controlling and containing the spill.
- The person(s) controlling and containing the spill have had appropriate training.

A non-reportable spill shall be recorded in the facility's spill log.

Notice of Intent (NOI)

The first formal step in the EIS process. The NOI consists of a public notice with the following information: a description of the proposed action and alternatives; a description of the agency's proposed scoping process, including scoping meetings; and the names and addresses of the persons to contact within the lead agency about the EIS.

Ozone-Depleting Substance

A compound that contributes to stratospheric ozone depletion. ODS include chlorofluorocarbons, hydrochlorofluorocarbons, halons, methyl bromide, carbon tetrachloride, and methyl chloroform. ODS are generally very stable in the troposphere and only degrade under intense ultraviolet light in the stratosphere. When ODS's break down, they release chlorine or bromine atoms, which deplete the ozone.

PCB-Containing

An article with a PCB concentration greater than or equal to 500 ppm (40 CFR 761.3)

PCB-Contaminated

A non-liquid material containing PCBs at concentrations ≥ 50 ppm but < 500 ppm; a liquid material containing PCBs at concentrations ≥ 50 ppm but < 500 ppm or where insufficient liquid material is available for analysis, a non-porous surface having a surface concentration $> 10 \mu\text{g}/100 \text{ cm}^2$ but $< 100 \mu\text{g}/100 \text{ cm}^2$, measured by a standard wipe test as defined in § 761.123.

Primary Drinking Water Standards

Concentrations of specified contaminants that, when exceeded, present a risk to the health of humans when continually used for drinking or culinary purposes.

Project Proponents

All personnel responsible for reviewing or authorizing programs, projects and activities; or managers of proposed programs, projects, and activities that are being conducted by NASA, on behalf of NASA, or with approval by NASA.

Qualifying Storm Event As defined by the IGP, a QSE is a precipitation event that produces a discharge from any drainage area that is preceded by 48 consecutive hours without a discharge from any drainage area.

Reactive The characteristic of a waste that renders the waste hazardous by any of the following criteria:

1. It is normally unstable and readily undergoes violent change without detonating.
2. It reacts violently with water, forms potentially explosives mixtures with water, or generates toxic gases, vapors or fumes when mixed with water.
3. It is capable of detonation or explosion if subjected to an initiator or heat.
4. It contains cyanides or sulfides which can generate toxic gases when exposed to pH conditions between 2.0 and 12.5.
5. Examples of wastes which exhibit the reactivity characteristic are:

Explosives	Lithium aluminum hydride
Magnesium powder	Potassium metal
Sodium borohydride	Sodium hydrosulfite
Sulfur phosphide	Trichlorosilane

Record of Decision (ROD) A public document that reflects the agency's final decision, rationale behind that decision, and commitments to monitoring and mitigation. A ROD is used to accompany an EIS. The ROD is signed by the ARC Center Director and NASA HQ, kept in the program's official files, and made available on request. The ROD is not published in the *Federal Register*.

Record of Environmental Consideration (REC) A brief document that is used to describe a proposed action and explain why further environmental analysis is not required. This document is mainly used to confirm that use of a CatEx is appropriate or that a proposed action is adequately covered by an existing NEPA document.

Release Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, dumping, leaching, or disposing into the environment (including abandonment or discarding of barrels, containers, and other closed receptacles), unless permitted or authorized by a regulatory agency.

Reportable Quantity (RQ) Spills The reportable quantity of hazardous substances established by 40 CFR 302 (Table 302.4 - CERCLA Hazardous Substances) and 355 (Appendix A -Extremely Hazardous Substances). Releases of any of the chemicals listed in 40 CFR 372 (Subpart D - Specific Toxic Chemical Listings) are also applicable

Reportable Spill	<p>Actual or threatened discharge of an oil that enters the environment. Examples include:</p> <ul style="list-style-type: none"> • A spill enters a storm drain or ditch. • A spill enters the sanitary sewer. • A spill contacts soil. • A spill contacts asphalt (particularly in the case of solvents). • A spill into secondary containment requires more than eight hours to clean.
Sanitary Sewer (or Sanitary Sewer System)	<p>All sewers, treatment plants, and other facilities owned and operated by the City of Mountain View, the City of Palo Alto, the City of Sunnyvale, or Ames for carrying, collecting, disposing of sanitary sewage and industrial wastewater</p>
Satellite Accumulation Area (SAA)	<p>An area, designated in writing by the Environmental Management Division, that meets specific criteria allowing for the accumulation of up to 55-gallons of hazardous wastes or 1 quart of extremely hazardous or acutely hazardous wastes for up to 270 days (9 months).</p>
Scrap metal	<p>Any one or more of the following:</p> <ol style="list-style-type: none"> 1. Manufactured, solid metal objects and products. 2. Metal workings, including cuttings, trimmings, stampings, grindings, shavings and sandings. 3. Solid metal residues of metal production. 4. Printed circuit boards that are recycled. 5. Scrap metal is not: <ol style="list-style-type: none"> i. Lead-acid storage batteries, waste elemental mercury, and water-reactive metals such as sodium, potassium and lithium. ii. Magnesium borings, trimmings, grindings, shavings, sandings, and any other forms capable of producing independent combustion. iii. Beryllium borings, trimmings, grindings, shavings, sandings, and any other forms capable of producing adverse health effects or environmental harm in the opinion of the Department. iv. Any metal contaminated with a hazardous waste, such that the contaminated metal exhibits any characteristic of a hazardous waste. v. Any metal contaminated with an oil that is a hazardous waste and that is free-flowing. vi. Sludges, fine powders, semi-solids, and liquid solutions that are hazardous wastes.

	Any printed circuit board that has been removed from a universal waste electronic device by a universal waste handler (22 CCR 66260.10).
Secondary Containment	An impermeable, chemically compatible contained area or container (e.g., bermed pad, tray, or overpack drum) used to contain spills and leaks from primary containers.
Secondary Drinking Water Standards	Levels of specified contaminants or physical properties that, when exceeded, may be objectionable to an appreciable number of people, but are not generally hazardous to health.
Segregation	The separation of chemically incompatible materials by physical barriers or distance.
Sharps	Any device having acute rigid corners, edges, or protuberances capable of cutting or piercing, including: <ol style="list-style-type: none"> 1. Hypodermic needles, syringes, blades, needles with attached tubing 2. Acupuncture needles 3. Root canal files 4. Broken glass items such as Pasteur pipettes and blood vials contaminated with other medical waste. <p>Sharps waste excludes broken glass not contaminated with biohazardous waste, which should be disposed of in special containers for broken glass.</p>
Source Reduction	Any practice which: <ol style="list-style-type: none"> 1. Reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and 2. Reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants. The term includes equipment or technology modifications, process or procedure modifications, reformulation, or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control.
Special Status Species	Any species that has protections as defined in either the Endangered Species Act, California Endangered Species Act, Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, or California Native Plant Protection Act.
Standby	A facility that is temporarily not in use and for which appropriate maintenance measures have been taken to maintain its vital or essential operating systems in a state of readiness or availability for

future use. Selective life-cycle cost effective facilities maintenance and repair is required. Total time to deactivate and then to reactivate the facility, including the standby period, is expected to be less than 12 months.

Storage Facility	<p>A facility designated to store PCB-Containing and -Contaminated waste, or other materials according to the standard set in 40 CFR 761.65.</p> <p>NASA-Ames ARC has one designated PCB storage facility: N265</p>
Storm Drain (or Storm Drain System)	<p>The system of pipes and channels primarily designed to convey storm water, surface water, street wash, drainage, or other storm run-off to the wetlands and other surface waters at the northern end of Ames.</p>
Sustainable Acquisition	<p>Sustainable acquisition is the policy and practice of purchasing products and services that have the least detrimental impact or greatest positive impact on the environment over the entire life-cycle. Sustainable acquisition specifically includes purchasing products and services that are less toxic, made with recycled and/or renewable materials, contain no ODSs, have low GWP, and conserve water and energy; instead of competing products and services without these attributes.</p>
Take	<p>To harass, harm, shoot, wound, trap, collect, hunt, pursue, catch, capture, or kill a species.</p>
Threatened Species	<p>A threatened species is one that is likely to become an endangered species within the foreseeable future because of a decline in its numbers throughout all or a significant portion of its range or habitat.</p>
Threshold Planning Quantity	<p>The quantity for an extremely hazardous substance as defined in 40 CFR, Part 355, Appendix A.</p>
Toxic Gas Cabinet	<p>A toxic gas cabinet is one that is designed to provide secondary containment for the storage of a specific gas at a specific quantity. The gas cabinets shall be designed to meet all SCC requirements and be approved by the ARC Construction Permit Board.</p>
Toxic Gas Ordinance	<p>Santa Clara County Toxic Gas Ordinance, Number NS-517.44, which regulates the use of Toxic Gases in the County.</p>
Toxic Gas Permit	<p>A permit issued by the County of Santa Clara that allows the use of a Toxic Gas under strict permit conditions at Ames.</p>
Toxic Release Inventory	<p>The TRI is a publicly available EPA database that contains information on toxic chemical releases and waste management activities reported annually by certain industries as well as federal facilities.</p>

Toxicity

The characteristic of a waste that renders the waste hazardous by any of the following criteria:

1. Contains any of the 39 toxic materials at or above the concentrations listed in 40 CFR 261.24 (see Appendix D.7, Table I, TCLP compounds).
2. Has an acute oral LD50 (rat) of <2,500 mg/kg, dermal LD50 (rabbit) of <4,300 mg/kg, inhalation LC50 (rat) of <10,000 ppm (as a gas or vapor), or aquatic 96-hour LC50 of <500 mg/liter (using fathead minnows, golden shiners, rainbow trout).
3. Contains any of the inorganic and organic persistent and bioaccumulative substances at or above the concentrations listed in 22 CCR 66261.24(a)(2)(A) and (B) (see Appendix D.7, Table II and Table III).
4. Contains any of the substances listed in 22 CCR 66261.24.(a)(7) at a single or combined concentration >0.001% by weight (see Appendix D.7, Table IV).
5. Poses a hazard to human health or the environment because of its carcinogenicity, acute or chronic toxicity, bioaccumulative properties or persistence in the environment.
6. Examples of wastes which exhibit the toxicity characteristic are:

asbestos	barium oxide
catalyst with isocyanate	chloroform
lead acetate	mercury compounds
methylene chloride	oil/water mixtures
phenol	polychlorinated biphenyls (pcb)
silver solution	sodium cyanide
vinyl chloride, 0.01% by weight	

Treatment

A process applied to medical waste resulting in the destruction of pathogenic microorganisms rendering the waste noninfectious prior to disposal as a solid waste.

Uncontaminated Soil

Soil from remediation or construction action that is deemed to be suitable for reuse within ARC.

Underground Storage Tank (UST)

An underground storage tank (UST) includes all tanks and associated piping or combination of tanks where 10 percent or more of the tank's volume is below ground surface. Exceptions to the UST definition applicable to ARC include septic tanks, storm water and wastewater collection systems, and tanks located in a basement but completely visible.

Universal Waste	Specific hazardous wastes that are subject to reduced management standards instead of the standards that apply to hazardous wastes for the following reasons. Universal wastes 1) are commonly generated by a wide variety of establishments, 2) are generated by a large number of generators frequently in small quantities by each generator, 3) pose a low risk of harm during accumulation and transport relative to the risk posed by hazardous waste. The specific wastes are: batteries, thermostats, lamps, cathode ray tube materials, and motor vehicle light switches containing mercury.
Waste Accumulation Area	Area where hazardous waste is accumulated prior to transfer to N265 for disposal.
Wetlands	Those areas that meet three main criteria, including water saturation, duration of saturation, and vegetation, as defined by the USFWS, Regional Water Quality Control Board, and the USACE. These areas may be inundated by surface or ground water and normally support a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include marshes, sloughs, potholes, river overflows, meadows, and water bodies. A large portion of ARC wetlands are seasonal in nature. Appendix C.5 provides a map of the delineated wetlands and Waters of the U.S. at ARC.

APPENDIX B. ACRONYMS

ACE	Ames Chemical Exchange
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
AST	Aboveground Storage Tank
AWIA	America's Water Infrastructure Act
BAAQMD	Bay Area Air Quality Management District
BMP	Best Management Practices
CARB	California Air Resources Board
CatEx	Categorical Exclusion
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERS	California Electronic Reporting System
CPG	Comprehensive Procurement Guidelines
CRT	Cathode Ray Tube
CWA	Clean Water Act
CY	Calendar Year
CZMA	Coastal Zone Management Act
DBP	Disinfection Byproducts
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
EDL	Environmental Document Library
EIS	Environmental Impact Statement
EMD	Environmental Management Division
EMS	Environmental Management System
EO	Executive Order
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act

EWI	Environmental Work Instruction
FOIA	Freedom Of Information Act
FRP	Facility Response Plan
FSM	Facility Service Manager
FY	Fiscal Year
GSA	General Services Administration
GWP	Global Warming Potential
H&SC	Health & Safety Codes
HAA	Haloacetic Acids
HMI	Hazardous Materials Inventory
ISD	Incidental Sewer Discharge
ISO	International Organization for Standardization
MFA	Moffett Federal Airfield
MIMP	Mitigation Implementation and Monitoring Plan
NADP	NASA Ames Development Plan
NARA	National Archives and Records Administration
NEPA	National Environmental Policy Act
NETS	NASA Environmental Tracking System
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NOI	Notice of Intent
NRP	NASA Research Park
ODS	Ozone Depleting Substance
PAC	Polycyclic Aromatic Compound
PBT	Persistent, Bioaccumulative, Toxic
PCB	Polychlorinated Biphenyls
PM	Particulate Matter
PPE	Personal Protective Equipment
POTW	Publicly Owned Treatment Works
QSE	Qualifying Storm Event
RCRA	Resource Conservation and Recovery Act

REC	Record of Environmental Consideration
ROD	Record Of Decision
SAA	Satellite Accumulation Area
SCCO	Santa Clara County Ordinance
SDS	Safety Data Sheet
SFPUC	San Francisco Public Utilities Commission
SMOP	Synthetic Minor Operating Permit
SNAP	Significant New Alternatives Policy
SPCC	Spill Prevention, Control, and Countermeasures
THM	Trihalomethane
TRI	Toxic Release Inventory
TSDf	Treatment, Storage, Disposal Facility
UFC	Uniform Fire Code
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
VOC	Volatile Organic Compound

APPENDIX C. ATTACHMENTS

C.1 CHAPTER 7 – HAZARDOUS WASTE MANAGEMENT

C.1.1 Hazardous Waste Accumulations Log Label and Universal Waste Label

Hazardous Waste Accumulation Log	
Physical State: <input type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas	
Hazardous Properties: <input type="checkbox"/> Corrosive <input type="checkbox"/> Toxic <input type="checkbox"/> Reactive	
<input type="checkbox"/> Flammable <input type="checkbox"/> Other _____	
Generator's Name: _____	
Phone: _____ M/S: _____ Org. Code: _____	
Accumulation Point: Bldg: _____ Room: _____	
Satellite Accumulation Start Date: _____	
Satellite Accumulation Stop Date: _____	
90 Day Accumulation Start Date: _____	
Waste Component(s)	Percent(s)
_____	_____
_____	_____
_____	_____
_____	_____
NASA Ames Research Center, Moffett Field, CA	
ARC #AB-2 (Dec 92)	

C.1.2 Empty Container Label

EMPTY	
NO MORE THAN ONE INCH OF RESIDUE REMAINS ON THE BOTTOM OF THIS DRUM. DRUM IS EMPTY BY EPA STANDARDS.	
Last Contained	

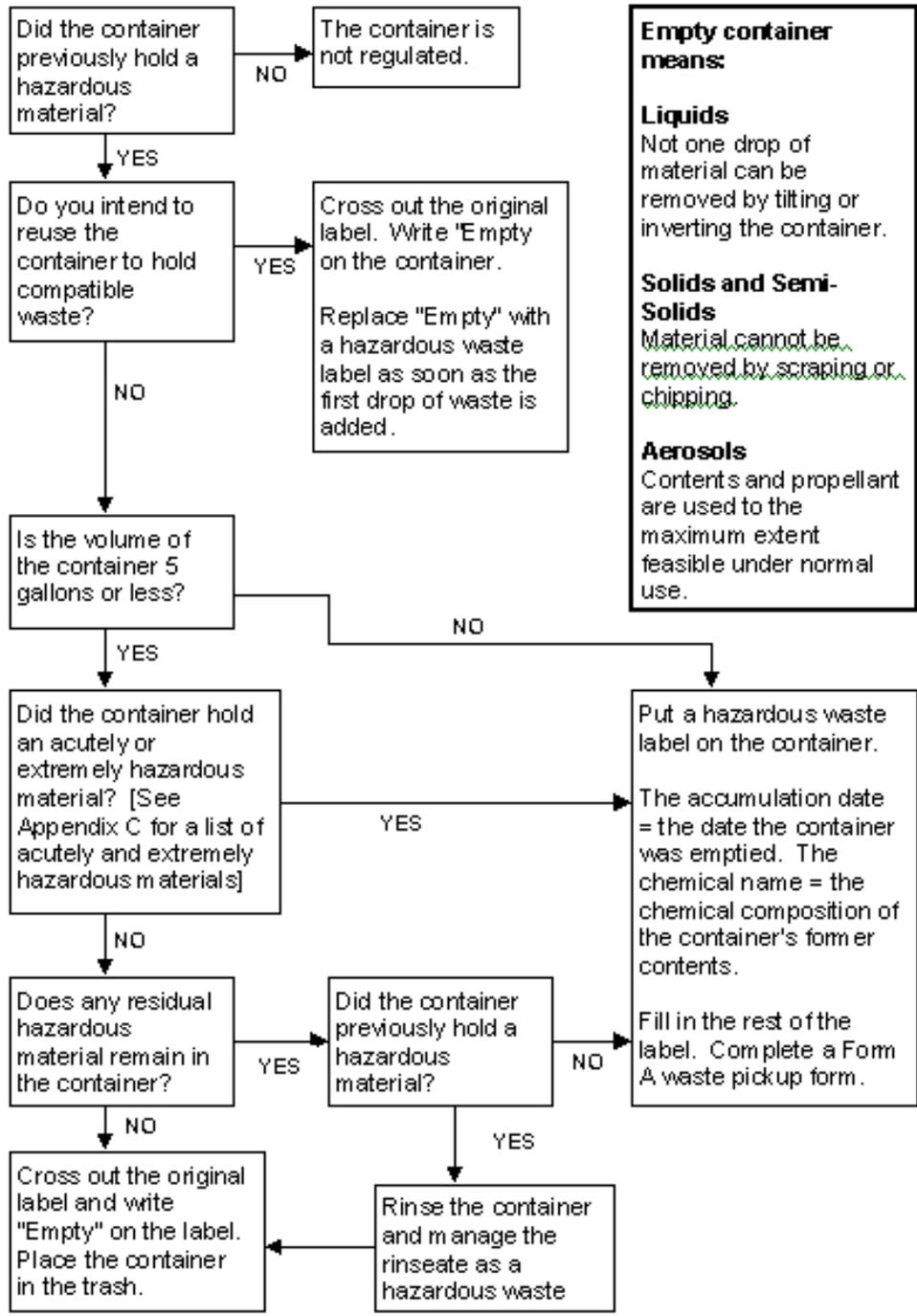
Date	

Department	

Signature	

Lab Safety Supply Inc.	11/95
Reorder No. 20926	

C.1.3 Empty Container Decision Tree



Empty container means:

Liquids
Not one drop of material can be removed by tilting or inverting the container.

Solids and Semi-Solids
~~Material cannot be removed by scraping or chipping.~~

Aerosols
Contents and propellant are used to the maximum extent feasible under normal use.

C.2 Chapter 9 – Medical Waste Management

C.2.1 Biohazard Bags



C.2.2 Biohazard Bags POCs

Area of Responsibility	Contact
Autoclave/ washroom	Exobiology Branch Chief
Medical Waste Questions	Environmental Protection Specialist
Medical Waste Pickups	EMD Contractor

C.2.3 Biohazard Symbol



C.2.4 Sharps Containers



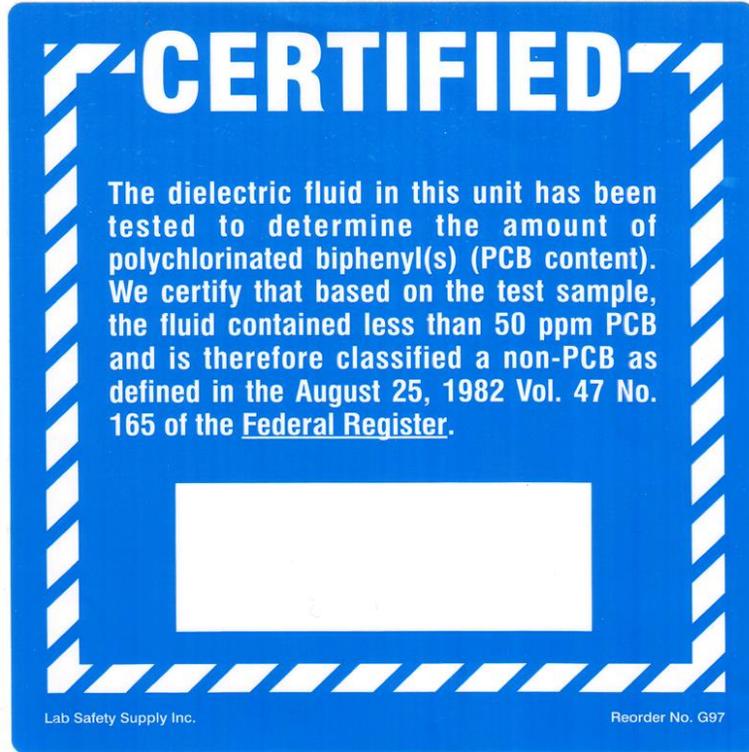
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C.3 Chapter 11 – Polychlorinated Biphenyl (PCB) Management

C.3.1 Examples of PCB-containing or PCB-contaminated labels.



C.3.2 Example of Non-PCB (<50 ppm of PCB) Label



C.3.3 Example of Non-PCB Label for Equipment Containing Oil with 5-50 ppm of PCB



C.4 Chapter 15 – Sustainability

C.4.1 Practices for Pollution Prevention

The following practices are used for all ARC activities and operations to promote cost-effective source reduction and recycling:

- a. Minimize Chemical Use and Toxicity** - Whenever possible, use the minimum amount and lowest toxicity of chemicals that will work. Design processes with this in mind for greatest benefit.
- b. Alternative Chemical Use** - Where practicable, maximize the use of safe alternatives to toxic release inventory (TRI) chemicals, Persistent Bioaccumulative and Toxic (PBT) chemicals, and ODSs and high GWP chemicals as approved by the EPA's SNAP program. For a list of ODS alternatives visit: <http://www.epa.gov/Ozone/snap/index.html>
- c. Energy Conservation** - Employees turn off computers, lighting, printers, and other equipment when not in use and prior to leaving the Center for the day, when feasible.
- d. Water Conservation** - Employees minimize water use at the Center as practical.
- e. Reusable Products** - Employees order and use non-disposable products or products that promote reuse (e.g., ball point pens with replaceable ink cartridges and rechargeable batteries).
- f. New Facilities and Installations** - New facilities and equipment include specifications for conserving water and energy. Such equipment includes energy saving lighting devices, cooling towers that treat and recycle water, etc.
- g. Recycled Products Purchasing** - When purchasing/ordering items designated by EPA as being available with recycled content, ARC employees and contractors purchase those items composed of the highest percentage of recovered materials practicable consistent with product performance requirements, quality, and safety. EPA has issued Comprehensive Procurement Guidelines (CPG) for the procurement of many products containing recovered materials. All purchases of items covered by these guidelines meet or exceed the EPA guideline standards unless written justification is provided on the Request for Waiver Form (NF 1707). Within one year after EPA designates new items, organizations purchase those items according to EPA's guideline standards. For complete and updated item designations, visit EPA CPG list at <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program#products>.
- h. Biobased Products Purchasing** – When purchasing/ ordering items designated by USDA BioPreferred Program as available with biobased materials, ARC employees and contractors give preference to purchasing items that meet or exceed the minimum content of biobased materials practicable consistent with product performance requirements, quality, and safety. Purchasers of items which do not meet USDA minimum requirements submit a Request for Waiver to the Environmental Management Division. For complete and updated list of item designations, visit USDA BioPreferred proposed and final regulations at: <http://www.biopreferred.gov/BioPreferred/faces/catalog/Catalog.xhtml>
- i. Electronic Communication** - Employees transfer documents electronically when possible.

j. Minimize printing and Utilize Double Side Printing and Photocopies - Reports, memos, and other paper documents are stored, transmitted and used electronically whenever practical and printed or photocopied in double sided format when they must be printed.

k. Use Recycled Paper - Employees order and use printing and writing paper made from recycled materials instead of products made from virgin materials. Printing and writing paper contain at least 30% recycled fibers (paper containing 30% and 100% recycled content requirement are available in the NASA store).

C.4.2 Toxic Release Inventory (TRI) Resources and Exemptions

C.4.2.1 In accordance with EO 13834 and EPCRA Section 313, ARC must annually report release of specified chemicals that were manufactured, processed or otherwise used in quantities which meet or exceed the applicable threshold quantities during each calendar year.

C.4.2.2 A complete list of TRI chemicals, TRI PBT Chemicals, and guidance can be obtained at: <https://www.epa.gov/toxics-release-inventory-tri-program/persistent-bioaccumulative-toxic-pbt-chemicals-covered-tri>

Note: When determining usage quantities, include products containing TRI chemicals at concentrations above the de minimis levels and not just pure chemical products. The de minimis levels are 1% or 0.1% for carcinogens. There is no de minimis concentration level for PBT chemicals.

C.4.2.3 Examples of Applicability. Examples of some known uses and applicable threshold amounts at ARC are given below:

Division	Product - Usage and TRI Constituents	Internal Threshold (pounds)
Aviation Management Office	JP-8, - aircraft fuel transfer operations (benzene, ethylbenzene, toluene, xylenes)(NASA Ames Research Center Based and Transient Aircraft)	200
Plant Engineering Branch	Refrigerant - Plant Engineering Branch facilities HVAC/refrigeration system maintenance (CFC 11, 12, and 114)	200
Aeronautics and Space Flight Hardware Development	Metals - metal plates, sheets, rods, etc. used by machine shops to manufacture products or specialty articles (e.g., models) for use in other laboratories (arsenic, antimony, cadmium, chromium, copper, lead, manganese, nickel, zinc, etc.)	200

Division	Product - Usage and TRI Constituents	Internal Threshold (pounds)
Documentation Development	Photochemicals - photo development processing by the Imaging Technology Group in N-203 (formaldehyde, hydroquinone)	200
Aeronautics and Space Flight Hardware Development	Paints and Solvents - shops and paint booths in N-211 and N-212 (VOCs)	200

C.4.2.4 Exemptions. To lessen the burden of tracking all uses and releases of TRI chemicals, EPA guidance allows for the following exemptions:

a. Releases from the following do NOT need to be reported:

- (1) De minimis concentrations - activities that use mixtures containing TRI chemicals at concentrations less than 1% by weight or for carcinogens less than 0.1% by weight (note: the de minimis concentration is not applicable for PBT chemicals)
- (2) Articles - those items brought on-site that contain toxic chemicals and are used without releasing the chemical or are not significantly altered through on-site use. An example is a battery.

b. Uses - subcategories of exempt uses are:

- (1) Structural component use - materials used to construct or repair a part of a facility;
- (2) Routine janitorial/facility grounds maintenance use - products used for janitorial cleaning and grounds maintenance such as chlorine bleach, ammonia, fertilizer, and pesticides;
- (3) Personal use - consumer products containing toxic chemicals used by employees such as cosmetics, and drugs;
- (4) Motor vehicle maintenance use - toxic chemicals used to maintain **ancillary** vehicles such as cars, trucks, and forklifts have an exemption for otherwise use, but not for manufacturing. The exemption covers all routine vehicle maintenance activities which use products that contain toxic chemicals including gasoline, diesel fuel, brake fluids, transmission fluids, oils, antifreeze, batteries, cleaning solutions, and paints. Any combustion products from vehicle use must be considered toward the manufacturing threshold.
- (5) Laboratories - the exemption covers TRI chemicals used in activities directly engaged in R&D, quality control, and sampling and analysis (see Section 6.1.6 and 6.1.7). TRI chemicals used in shops and facilities operations activities, even though they support R&D, are **not** exempt.

a. Exempt NASA Laboratory Activities. Releases of toxic chemicals from the following NASA laboratory activities are EXEMPT:

- (1) Traditional bench scale R&D work;

- (2) Testing components or engines on test stands or in test cells for development of new components or engines. Components or engines that are pilot plant scale or that will be installed on aircraft, rockets, or the shuttle are not exempt;
- (3) Testing components in wind tunnels that are smaller than pilot plant scale (i.e., a wind tunnel test that uses less than 1,000 pounds of a regulated chemical per year).

C.4.3 Form RC: Ames Chemical Exchange (ACE) Chemical Request Form

FORM RC
 AMES CHEMICAL EXCHANGE (ACE) CHEMICAL REQUEST FORM
 NASA Ames Research Center

Email to "ARC-DL-HazWaste" or Mail Stop 229B-1 Phone: 4-2613 Alt. Phone: 4-0927

Requester Name: _____ Phone: _____ Org. Code/Company _____

Date: _____ Alternate Contact Name: _____ Alternate Phone: _____

Please deliver the following items listed on the ACE Inventory (allow 1 to 3 days for delivery):

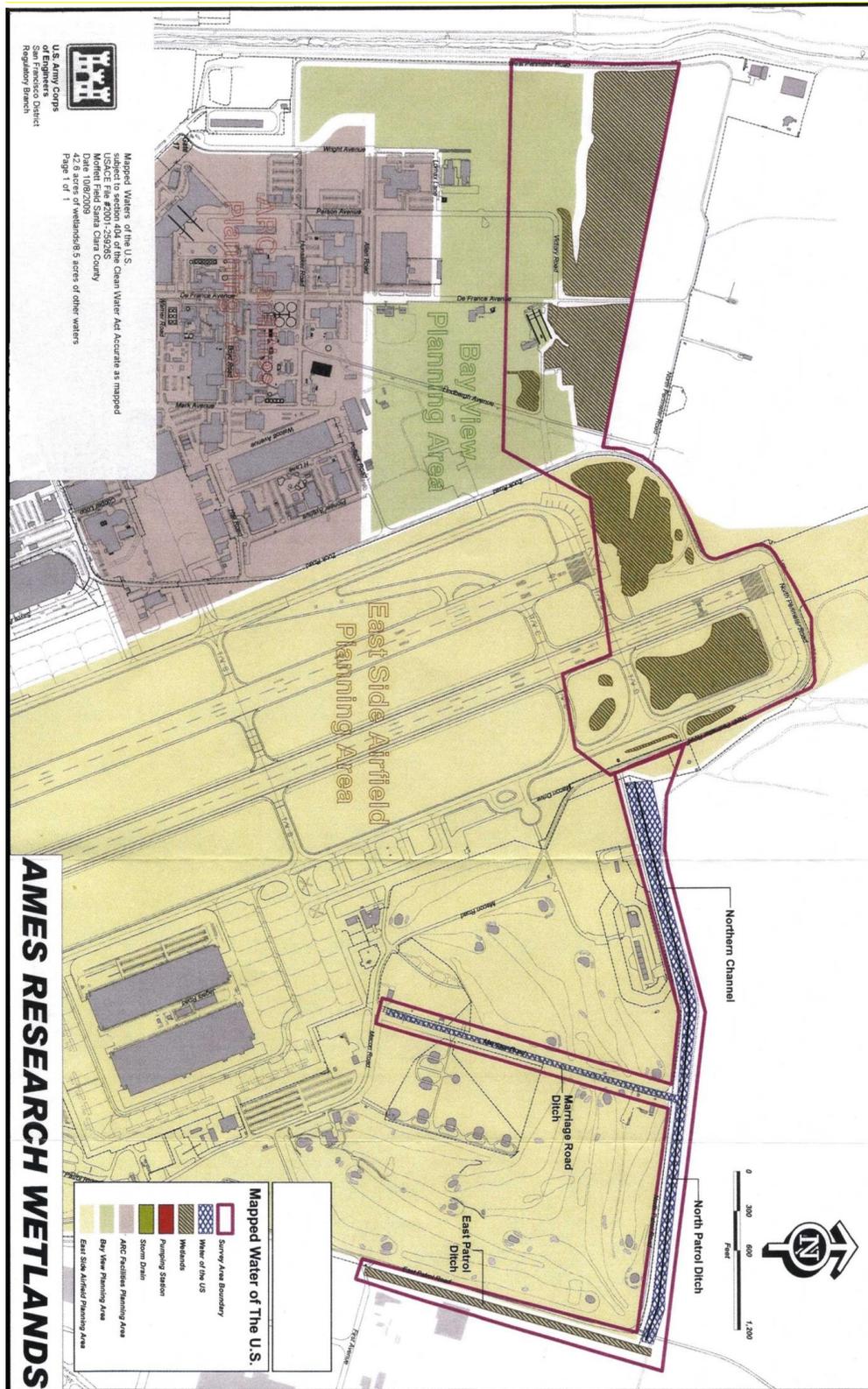
CHEMICAL NAME	ACE ID#	CONTAINER SIZE (e.g. 1 pint)

TOTAL NUMBER OF ITEMS REQUESTED: _____

Deliver to: Bldg.: _____ Room: _____ Requester's Signature _____

JQ USE ONLY: Date request received: _____ Received by: _____
 Date items delivered: _____ Delivered by: _____

C.5.2 ARC Wetlands (USACE 2009)



C.6 Chapter 18 – Wildlife and Vegetation

C.6.1 Burrowing Owl Habitat Preserves

Note: Check with the Environmental Management Division to ensure you are using the latest map.

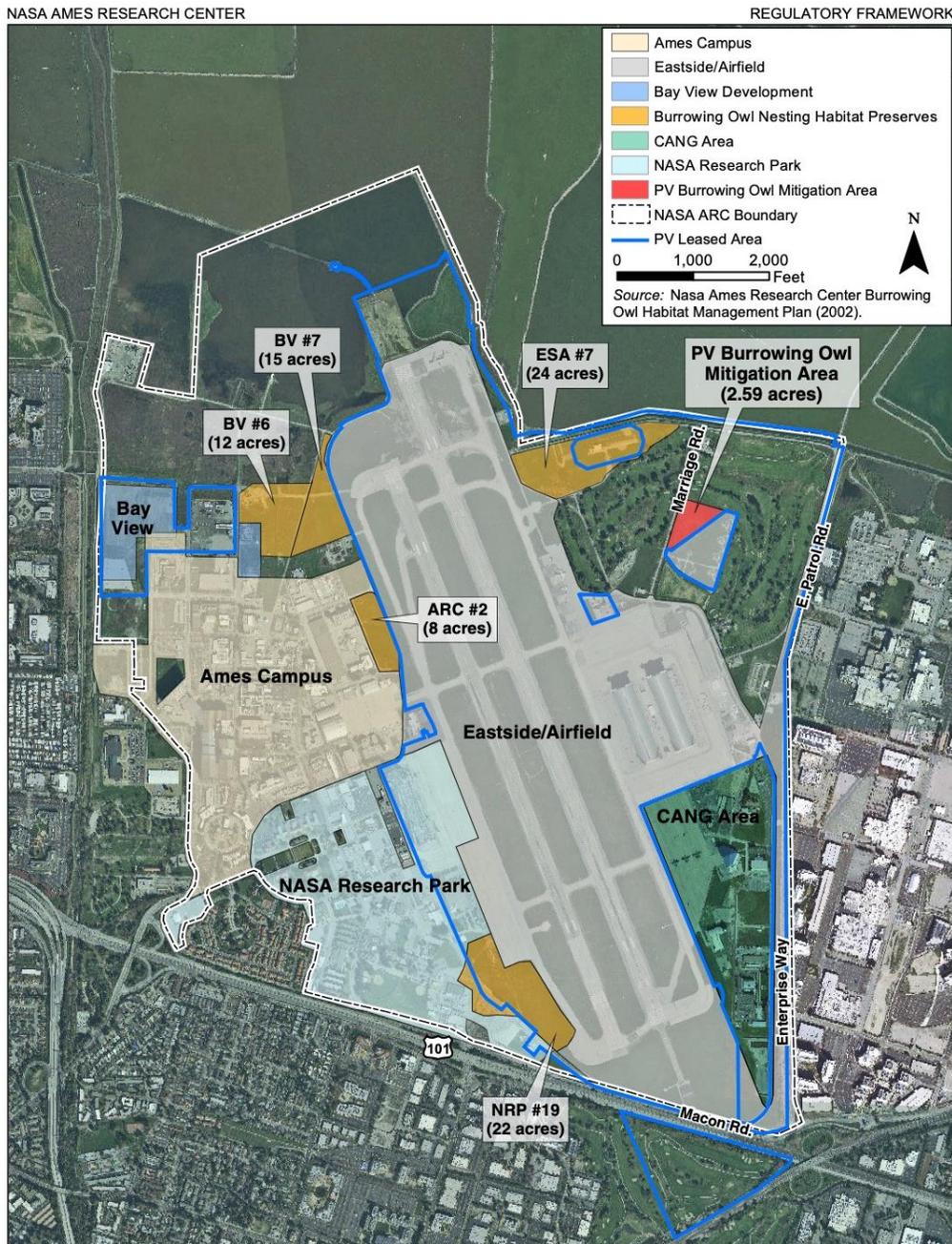


Figure 2-1. NASA Ames Research Center Burrowing Owl Preserves