

I. INTRODUCTION

Subcontractor shall take all reasonable measures in the performance of the work under this Subcontract to protect the safety and health of Subcontractor's employees and lower-tier subcontractors, JPL employees, and members of the public who might be affected by Subcontractor's work. This document describes JPL-specific environmental, health and safety requirements ("JPL EH&S Requirements") that Subcontractor must comply with in performing work under the Subcontract.

Subcontractor shall comply with these JPL EH&S Requirements as well as all applicable federal, state and local environmental, health and safety laws and regulations, and any other safety and occupational health measures JPL may reasonably direct during the term of the Subcontract (collectively, "Applicable EH&S Standards"). Subcontractor shall ensure that all lower-tier subcontractors are aware of and in compliance with Subcontractor's approved safety and health program as well as all Applicable EH&S Standards. Subcontractor shall include the substance of this document in all lower-tier subcontracts issued under the Subcontract.

Note: This document is not intended to and does not contain a comprehensive listing of all Applicable EH&S Standards. It addresses how certain Applicable EH&S Standards are specifically applied at JPL. In addition to complying with this document as part of the Subcontract, Subcontractor remains responsible for determining for itself which laws and regulations apply to its work under the Subcontract and for complying therewith.

JPL may notify the Subcontractor in writing of noncompliance with an Applicable EH&S Standard and may specify corrective measures to be taken, which may include suspension of Subcontractor employees and/or lower-tier subcontractor employees from the work site. Subcontractor shall promptly implement any corrective measures and report in writing to JPL on the actions taken.

Unless otherwise indicated in this document, Subcontractor is required to submit all deliverables specified herein, including but not limited to those listed in Section VI, to the JPL Subcontracts Manager.

II. SAFETY REQUIREMENTS

A. GENERAL

1. Subcontractor is responsible for ensuring that its employees and lower-tier subcontractors are aware of the hazards associated with any specific task that will be performed pursuant to the Subcontract. Subcontractors are required to show one of the following Safety Awareness videos applicable to the work/classification to their employees who will perform work at JPL PRIOR to start of work at JPL facilities. See listing:
 1. Construction Worker
 2. Construction Supervisor
 3. Category A/Consultants and all classifications other than Construction

These videos can be accessed at <http://acquisition.jpl.nasa.gov>

2. Subcontractor is responsible for providing all safety equipment and personal protective equipment appropriate for the task. Subcontractor is responsible for providing required

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medical clearance and training for its employees.

3. Subcontractor is responsible for maintaining a safe job site and job site perimeter and for providing traffic controllers for both vehicle and pedestrian traffic when the normal traffic pattern is interrupted by facilities or construction activities at any worksite. Traffic controllers and all other Subcontractor personnel working in roadways shall wear high-visibility vests. Subcontractor shall provide necessary barricades, hazard warning tape, traffic signs, and trench cover plates for pedestrians and vehicles.
4. Any use of JPL-owned emergency equipment and fire hydrants for other than emergency purposes is prohibited, unless specific approval is first obtained from the JPL Project Manager.
5. Where hazardous materials are used at the job site, the Subcontractor is responsible for contacting the Environmental Health & Safety (EH&S) Representative for Material Safety Data Sheets (MSDS) related to hazardous materials used at the job site.
6. Subcontractor personnel shall maintain a state of cleanliness and orderliness in work areas at all times. Stock items, furniture, equipment, interior decoration, vehicles, debris, or other substantial physical objects shall not be placed or stored temporarily, or permanently, in a path of emergency travel (i.e., corridor, exit door, stairway, or point of exit discharge), without the approval of the "Authority Having Jurisdiction". Hallways, doorways, stairwells, lobbies, and areas beneath stairs shall be maintained free of trash and debris and shall not be used as storage space. No object shall be located in such a manner as to prevent access to, or use of, fire protection equipment (i.e., fire extinguisher, fire alarm pull stations, hydrants, fire hose outlets, sprinkler valves, or Fire Department connections).
7. EXPERIENCE MODIFICATION RATE (EMR):
 - (a) Prior to starting work, Subcontractor must complete and submit an "Experience Modification Rate" (EMR) form (JPL Attachment B-18) available at: <http://acquisition.jpl.nasa.gov/>.
 - (b) The completed form will be reviewed by the JPL Occupational Safety Program Office (OSPO) for acceptability.

B. FIRE PROTECTION SYSTEMS

1. When Subcontractor performs work on a JPL fire protection system, Subcontractor shall designate a single employee to be responsible for the impairment (turning off) of any fire suppression valve on that fire protection system. The same Subcontractor employee shall be responsible for re-activating (turning on) the fire protection valve involved. No other personnel shall be permitted to operate valves.
2. Any impairment of a fire protection system that lasts longer than 8 hours shall be documented by Subcontractor using written records acceptable to and available for review by the JPL Authority Having Jurisdiction.

C. EMERGENCIES/ INCIDENTS AND MISHAP REPORTING

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1. In the event of an emergency, from any JPL phone dial 911. From a cell phone or non JPL phone dial 818-393-3333 or 818-354-3333. Be prepared to provide the following information to the operator: your name, company, the nature of the problem and the location. Stay on the line until you are told to hang up. The operator will then notify the JPL Fire Department and they will dispatch the appropriate emergency personnel to the site. For work being performed at Goldstone or Table Mountain Facilities, refer to specific local emergency procedures at those facilities.
2. Subcontractor shall comply with, and ensure that lower-tier subcontractors comply with JPL mishap reporting requirements.
3. The Occupational Safety Program Office (OSPO) shall be the single point of contact for all mishaps and close calls. Initial notification of all mishaps shall be made to the Immediate Mishap and Close Call (IMACC) Reporting Line **818-354-2141**.
4. Telephonic notification to OSPO must be made as set forth in Table 1.
5. For all categories of mishaps, an initial report must be submitted within 8 hours.
6. All mishaps shall be investigated to the extent necessary to determine the Proximate causes and the Root causes
7. The initial mishap report must include:
 - Investigative findings
 - Initial corrective actions
 - Proposed and/or completed corrective actions
 - Lessons learned.
8. A detailed follow-up report must be submitted to the OSPO within twenty-four (24) hours from time of mishap, and subsequent report(s) must be submitted to the OSPO if additional information becomes known by Subcontractor and/or until all information required above has been provided.
9. All mishap reports must be completed within the following timeframes unless mitigating circumstances are present, (i.e., corrective actions are not complete, employee still on lost time, final cost not available):
 - 30 days for Occupational injury and/or illness mishaps
 - 60 days for property damage mishaps

NOTE: If mitigating circumstances are present, the mishap report must be reviewed and an updated report submitted to OSPO every 30 days until all corrective actions are closed and/or the employee returns to active duty.
10. Subcontractor shall provide to the OSPO quarterly reports specifying lost-time frequency rate, number of lost-time injuries, exposure, and accident/incident dollar losses as specified in the Subcontract Schedule.

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Table 1 Mishap Reporting Classification and Reporting Requirements *JPL Mishap Reporting Classifications and their associated definitions.*

Classification Level	Injury	Property Damage	Reporting Time Requirements to OSPO
Type A Mishap	Occupational injury and/or illness that resulted in: A fatality, <i>or</i> , A permanent total disability, <i>or</i> , The hospitalization for <i>inpatient care</i> of 3 or more people.	Total direct cost of mission failure and property damage is \$1,000,000 or more,	Immediate telephonic notification (Within 1 hour) of knowledge to OSPO at 818-354-2141 Note: Subcontractors to responsible for Cal/OSHA notification. Notify OSPO of the report to Cal/OSHA Initial written mishap report submitted within eight (8) Hours
Type B Mishap	Occupational injury and/or illness has resulted in permanent partial disability, <i>or</i> , The hospitalization for <i>inpatient care</i> of 1-2 people	Total direct cost of mission failure and property damage of at least \$250,000 but less than \$1,000,000.	Immediate telephonic notification (Within 1 hour) upon knowledge to OSPO at 818-354-2141 Initial written mishap report submitted within eight (8) Hours
Type C Mishap	Nonfatal occupational injury or illness that caused any workdays away from work, restricted duty, or transfer to another job beyond the workday or shift on which it occurred.	Total direct cost of mission failure and property damage of at least \$25,000 but less than \$250,000.	8 Hours from time of knowledge to OSPO at 818-354-2141 Initial written mishap report submitted within eight (8) Hours
Type D Mishap	Any nonfatal OSHA recordable occupational injury and/or illness that does not meet the definition of a Type C mishap.	Total direct cost of mission failure and property damage of at least \$1,000 but less than \$25,000.	8 Hours from time of knowledge to OSPO at 818-354-2141 Initial written mishap report submitted within eight (8) Hours
Close Call	An event in which there is no injury or only minor injury requiring first aid, but which possesses a potential to cause a mishap.	An event in which there is no equipment/property damage or minor equipment/property damage (less than \$1000), but which possesses a potential to cause a mishap.	8 Hours from time of knowledge to OSPO at 818-354-2141 Initial written mishap report submitted within eight (8) Hours
High Visibility Close Call	An event in which there is no injury or only minor injury requiring first aid, but which possesses a potential to cause a mishap <u>AND is a high visibility concern</u>	An event in which there is no injury or only minor injury requiring first aid, but which possesses a potential to cause a mishap <u>AND is a high visibility concern</u>	Immediate telephonic notification (within 1 hour) upon knowledge to OSPO at 818-354-2141

D. HAZARDOUS MATERIAL USE

1. Before hazardous materials are brought on to any JPL site, two (2) copies of all Material Safety Data Sheet (MSDS) sheets shall be submitted by Subcontractor for review by the appropriate JPL Occupational Safety Program Office (OSPO) and Environmental Affairs Program Office (EAPO) representatives. A copy of such MSDS sheets shall be included in the JPL Safety Manual in accordance with Section VI of this document.
2. Subcontractor shall immediately report all spills to the JPL Environmental Affairs Program Office. If the spill results in an immediate hazard to personnel or property, Subcontractor shall call the JPL Emergency number (see B.1 above) for assistance. Subcontractor is responsible for containing and cleaning up all spills when directed based upon a determination of the hazard made by the JPL Fire Department.
3. If Subcontractor brings radioactive sources and/or x-ray equipment on site to JPL, a request must be made to the JPL Radiation Safety Officer (RSO) for approval. Requests must be provided at least 48 hours prior to bringing such materials and/or equipment to JPL. Once approval has been granted, Subcontractor may bring these onsite.

E. ASBESTOS CONTAINING MATERIAL (ACM)

1. Asbestos Notification, Form JPL 2895 is attached to this Subcontract. Subcontractor shall distribute the notice to its personnel prior to starting any work. It is the responsibility of Subcontractor to ensure that all precautions are taken to avoid exposure of Subcontractor, lower tier subcontractor, as well as JPL employees to these materials if Subcontractor performs any work in areas where ACM is or might be present.
2. If Subcontractor is to perform abatement work, Subcontractor first shall submit an Abatement Plan to the OSPO that meets all Applicable EH&S Standards. Work shall be in strict accordance with JPL permit requirements and Subcontractor's approved abatement plan. Upon request, Subcontractor shall provide copies of laboratory analysis reports. A copy of the Abatement Plan and any such laboratory analysis reports shall be included in the JPL Safety Manual in accordance with Section VI of this document.
3. If Subcontractor discovers during the course of work unanticipated Presumed Asbestos Containing Material (PACM) and/or ACM, Subcontractor shall stop work and notify the JPL OSPO immediately upon receipt of the location and quantity.
4. When Subcontractor performs asbestos abatement, Subcontractor is responsible for providing area/clearance monitoring reports prior to re-occupancy.

F. HOT WORK

1. Prior to starting any hot work (e.g. welding, cutting, tar kettle use or other significant ignition source), a hot work permit must be obtained from the JPL Fire Department through the JPL EH&S Representative.

G. TRENCHES AND EXCAVATIONS

1. Subcontractor shall review all underground utility drawings with the JPL Occupational Safety Program Office (OSPO) construction safety representative prior to any excavation or

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trenching operations. An approved JPL excavation permit must be obtained from the OSPO prior to any digging operation. Subcontractor shall submit a copy of its Cal/OSHA Annual Permit and Written Notice to Dig to the OSPO.

2. JPL may require Subcontractor to submit a trenching and shoring plan for trenches and excavations deeper than five feet. Such plan shall be completed and signed by a civil engineer, licensed in the State of California, and submitted by Subcontractor to JPL EH&S Representative prior to performing trenching or excavating operations that could affect adjacent structures, improvements or areas that workers will be required to enter. A copy of any such plan shall be included in the JPL Safety Manual in accordance with Section VI of this document.
3. During any excavation, if an inadvertent discovery of human remains, funerary objects, sacred objects, or cultural artifacts on JPL facilities occurs, excavation must cease immediately. Notification of such inadvertent discovery must be given to the JPL Environmental Affairs Program Office representative immediately following discovery.

H. ELEVATED WORK SURFACES

1. A copy of Subcontractor's current Cal/OSHA permit for all scaffolding (erection or dismantling) over 36 feet shall be submitted to JPL OSPO in advance of applicable work. A copy of such permit shall be included in the JPL Safety Manual in accordance with Section VI of this document.
2. Subcontractors must perform 100% fall protection when working in any locations in which they are exposed to a potential fall of six (6) feet or greater.

I. LIFTING OPERATIONS AND LIFTING PERMIT

1. Prior to any mobile lifting and elevating operations, Subcontractor shall submit both a completed Lift Permit and a Lift Plan to the JPL EH&S Representative a minimum of five (5) working days in advance of contemplated lift. Subcontractor must obtain the Lift Permit from JPL and comply with any stated conditions before proceeding with lifting and elevating operations. The Lift Plan shall include the following:
 - Date, time and location of the lifting operation
 - Indicate whether Subcontractor is providing the crane or the name of the crane company, if different
 - Current annual & quadrennial crane certificates
 - Operator's license that meets the requirements of section 5006.1 ("Mobile Crane and Tower Crane-Operator Qualifications and Certification") of the Cal OSHA General Industry Safety Orders
 - Size and type of mobile crane
 - Safe work plan: description of work, crew, equipment and personal protective equipment, risk assessment, and preventive measures
 - Diagram of the staging and work area
 - Name of the JPL point of contact

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2. JPL will issue Subcontractor an approved Lift Permit following its review and acceptance of Subcontractor's Lift Plan. The permit may require Subcontractor to comply with certain conditions, including posting notices of roadway closures.
3. For its lifts involving JPL Critical Items (JCI), the JPL Lifting Devices Manager must review the Lift Plan prior to Subcontractor commencing such work.
4. In addition, prior to any lifting operation utilizing a crane, Subcontractor shall ensure that the following are in place: current crane certification, operator certification, crane inspection log, and review Pre-Lift Worksheet with all personnel engaged in the lifting operation. Subcontractor is responsible for maintaining a safe perimeter around all lifting and elevating operations. All roadways and personnel access points in or near the lifting operation must be blocked or cordoned off and Subcontractor personnel posted at the periphery of posted areas to prevent pedestrians from entering into the hazard zone.

J. CONFINED SPACE ENTRY

1. The types of confined spaces found at JPL include, but are not limited to, the following:
 - Manholes
 - Cooling towers
 - Elevator pits
 - Ground tanks (underground and above ground)
 - Underground tunnels
 - Environmental test chambers
2. Prior to entry into a confined space, Subcontractor shall submit a copy of its Confined Space Program policy to the JPL Subcontracts Manager. A copy of such Subcontractor policy shall be included in the JPL Safety Manual in accordance with Section VI of this document.
3. Subcontractor shall provide 24-hour advance notice to the OSPO prior to scheduling entry into a confined space.
4. Upon scheduling entry into a confined space, Subcontractor shall provide the OSPO and JPL Fire Department the exact time, and location, of the entry.
5. Subcontractor shall be responsible for testing, classifying and permitting spaces as permit-required or non-permit required confined space entries, as well as providing appropriate test equipment and standby rescue personnel and equipment.
6. Subcontractor must provide a Confined Space Entry Permit to allow and control entry into a confined space required such permit, in accordance with Title 8, CCR, Section 5157.

K. FLIGHT PROGRAM/PROJECT SAFETY

1. If the Subcontract involves flight project work, Subcontractor shall include in each Program/Project Plan prepared for a flight project a description of the risk management process that addresses the safety needs and special safety monitoring required for the flight program/project.

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2. Project Plans containing such requirements will be referenced in the Contract Data Requirements List (CDRL) issued by the Subcontracting Officer under the Caltech/NASA Prime Contract. Subcontractor shall comply with any such requirements.

L. ELECTRICAL SAFETY/ARC FLASH HAZARD PROTECTION

1. Subcontractor shall submit an electrical safety plan to the JPL Subcontracts Manager for *review and approval by OSPO prior* to the start of the work task. JPL Subcontracts Manager will provide such safety plan to OSPO immediately upon receipt. A copy of such plan shall be included in the JPL Safety Manual in accordance with Section VI of this document.
2. Energized Electrical Work Permit- If electrical equipment operating at 50 volts or more (phase to ground) cannot be de-energized due to the equipment design or operational limitations, work to be performed shall be considered energized electrical work and shall be performed by a written Work Permit only (JPL Form 7029). This form may be obtained at: <http://acquisition.jpl.nasa.gov/>.
3. Only qualified electrical personnel holding a valid certification issued by the State of California are permitted to perform any installation, wiring, trouble shooting or repair of electrical equipment.

M. LOCKOUT/TAGOUT/BLOCKOUT

1. Subcontractor shall submit a copy of its Lockout/Tagout/Blockout Program for review to the JPL Subcontracts Manager prior to performing any maintenance and servicing of machinery, equipment, or energy source(s). JPL Subcontracts Manager will provide this program plan to OSPO immediately upon receipt. A copy of Subcontractor's Program shall be included in the JPL Safety Manual in accordance with Section VI of this document.
2. Subcontractor shall ensure that a machine/equipment-specific lockout/tagout/blockout procedure is established in writing prior to performing any maintenance and/or servicing of machinery, equipment or energy source(s), and shall ensure compliance to the procedure by its employees.
3. For the purposes of lockout/tagout/blockout, only *red padlocks* shall be used.
4. Locks shall be individually keyed.
5. Locks shall be marked with the name and phone number of the Authorized Individual installing the lock.
6. Each lock shall have a primary and emergency (spare) key.
7. The primary key shall, at all times, be in the possession of the Authorized Individual that applied the lock.
8. The emergency key shall be kept in a secured area (e.g. lockbox), with access only by the Authorized Individual's immediate Supervisor.

N. HUMAN FACTORS

Human Factors is a multi-disciplinary effort to acquire knowledge about people at work and apply that knowledge to the functional relationships between people, tasks, technologies, and environment for safe and efficient human performance. Occupations requiring prolonged or unusual work schedules may impact employee's health, safety, work quality, and program/project activity schedule. JPL gives high priority to addressing potentially detrimental impacts of unusual or varying work times to create a safe, healthy work environment, and minimize undesirable outcomes. If Subcontractor employees will be working extended work shifts, Subcontractor shall develop human factors mitigation procedures and provide them to JPL as requested.

O. HEARING CONSERVATION

1. Subcontractor shall comply with the NASA Hearing Conservation requirements listed in NPR 1800.1B, NASA Occupational Health Program Procedures, Section 4.9. Access this document at: [NPR 1800.1B – Chapter 4](#)
2. Subcontractor shall *make available* to its employees hearing protection for use in locations with sound levels at or above 82 dBA.
3. Subcontractor employees exposed to noise levels at or above 85 dBA *are required* to wear hearing protection provided by the Subcontractor, regardless of the duration of exposure.
4. Subcontractor shall be responsible for maintaining a Hearing Conservation Program and performing noise monitoring as required.
5. Subcontractor shall provide a copy of its written Hearing Conservation Program, training records, and evidence of annual audiograms, if requested.
6. Subcontractor shall implement a “Buy Quiet and Quiet by Design” program to minimize noise hazards to personnel. Consideration shall be made to select and purchase equipment or machinery that is below hearing conservation levels of 80 dBA. See the NASA link referenced in paragraph 1 above.
7. Consistent with NASA requirements, Subcontractor shall place its employees in a Hearing Conservation Program when any one of the following conditions exists:
 - a. A Subcontractor employee is occupationally exposed to noise equal to or exceeding the Action Level of 8-hour time-weighted average (TWA) of 82 dBA measured on the A-scale; or a dose of 50 percent (50%) for 30 days or more per year.
 - b. A Subcontractor employee is occupationally exposed to the noise exposure limit equivalent to an 85 dBA, 8-hour TWA exposure using a 3 dB exchange rate.
 - c. A Subcontractor employee is occupationally exposed to impact or impulse noise in excess of 115 dBA.

P. GROUND BASED PRESSURE VESSELS AND SYSTEMS

1. Access - The JPL Pressure Systems Manager, the pressure vessel and/or system (P/V/S) owner's Inspector and the Inspector's delegates shall have access to any place where work concerned with pressure vessels or pressurized systems (PV/S) is being performed. This includes manufacture, fabrication, heat treatment, assembly, erection, examination, and testing of the PV/S. They shall have the right to audit any examination, to inspect the piping using any examination method specified by the engineering design, and to review all certifications and records necessary to ensure that the Code requirements are met.
2. Welding and Brazing - All welding or brazing shall be:
 - a. Performed in accordance applicable American Society of Mechanical Engineer (ASME) Code, including all essential variables for the joint in question.
 - b. Performed by welders qualified and current in accordance with the ASME Code, on such weld procedures.
3. Proof and Leak Testing – Proof and leak testing shall be performed on all new PV/S prior to operation and on repaired or modified PV/S prior to going back into operation. Proof and leak testing shall conform to the requirements of the applicable Code of construction and shall be witnessed by the PV/S owner's Inspector. A written procedure for the proof and leak test shall be submitted to the JPL Pressure Systems Manager for approval prior to testing.
4. Pressure Relief Valves – The accuracy of the set point of all Pressure Relief Valves (PRVs) shall be tested before the system is placed into service. Upon successful testing, a tag shall be attached to the PRV that indicates the cracking pressure, test date, and retest date according to the following schedule:
 - Steam systems: 1 year
 - Corrosive, flammable, or toxic fluid systems: 2 years
 - All others: 5 years
5. Flexible Hoses_- Flexible hoses shall not be used in PV/S in lieu of rigid piping or tubing unless the use of rigid piping or tubing has been determined to be impractical. Flexible hoses that may subject operators or other passers-by to a whipping hazard in the event of end connection failure shall have their ends restrained. Flexible hoses whose rupture would cause unacceptable hazard to personnel shall have sufficient intermediate restraint at appropriate intervals along their lengths to mitigate the hazard. Flexible hoses shall be tested at the flexible hose Maximum Allowed Working Pressure (MAWP) prior to being placed into service. Upon successful testing, a tag shall be attached to the hose that indicates the hose MAWP, test date, and retest date according to the following schedule:
 - Hoses with MAWP of 200 psig or less: 5 years
 - Hoses with MAWP greater than 200 psig: 2 years
6. Submittals_- Before the system is released back to JPL, the Subcontractor shall prepare, obtain, and submit the following minimum documentation for the system and each component to the JPL Pressure Systems Manager:
 - As-built system drawings

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- Pressure Component inventory
- Manufacturer's data sheets
- Test reports
- Engineering calculations
- Welding procedures
- Procedure qualification records
- Welder certifications

III. JPL SAFETY REPORTING

Safety concerns may be reported by calling 818-354-4711 or the JPL Hazard Reporting Hotline at 818-393-6483.

IV. NASA SAFETY REPORTING SYSTEM (NSRS)

The NASA Safety Reporting System (NSRS) is an anonymous, voluntary, and responsive reporting channel to notify NASA's upper management of concerns about hazards. Any NASA employee, Subcontractor employee, or Subcontractor working in support of NASA may use the NSRS to report safety concerns.

The NSRS is designed to supplement local hazard reporting channels. Any hazards or safety concerns should be reported using established safety reporting procedures.

We encourage all subcontractors to report safety concerns by using the JPL Safety reporting process as noted above in Section III as the first step.

V. ENVIRONMENTAL REQUIREMENTS

A. GENERAL

1. Subcontractor shall maintain *all* hazardous waste containers located on the work site in a manner which conforms to the Resource Conservation and Recovery Act, and applicable state laws.
2. Subcontractor shall not use JPL trash containers for any type of disposal at anytime. All general trash is the responsibility of the Subcontractor except as noted in Section D.
3. Subcontractor shall ensure that all hazardous waste is properly identified, and that accumulation time limits are not exceeded as described in paragraph 7 below. Subcontractor shall be responsible for off-site disposal as stated in Section V., subsection B. below.
4. Subcontractor shall manage all empty extremely hazardous waste containers as hazardous waste.
5. Subcontractor shall manage all empty hazardous materials containers greater than five (5) gallons as hazardous waste
6. Unless otherwise specified in the Subcontract, Subcontractor shall remove all containers with unused chemicals that are not waste from the site, including partially full containers of

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adhesive, solvent, paint, roofing tar, etc.

7. Subcontractor shall put waste into the properly labeled container. The container should remain closed except when adding waste to the container. Keep hazardous waste containers near the point of generation. Accumulate hazardous waste indoors. Segregate waste by type to prevent co-mingling; flammable, corrosive, toxic, or reactive. *Up to 55 gallons of the same type of hazardous waste, or one quart of extremely hazardous waste or acutely hazardous waste at the point of generation may be accumulated for up to nine (9) months, or when the quantity limitation of the container is reached, whichever occurs first.*
8. Subcontractor shall schedule waste collection by calling the Environmental Affairs Program Office (EAPO) Hazardous Waste Management at extension 4-0635 when the quantity limitation of the container is reached, or within nine (9) months of the waste accumulation start date on the 2799-S hazardous waste label, whichever occurs first.

B. HAZARDOUS WASTE

1. Subcontractor shall coordinate with the JPL Environmental Representative for approval of any hazardous waste accumulation, transport and disposal.
2. Subcontractor shall prepare Hazardous Waste manifests, Land Disposal Restriction forms and profiles and send copies of the documents for review and approval to the Environmental Hazardous Waste Coordinator at least 72 hours prior to scheduled transport.
3. Only the JPL-Environmental Hazardous Waste Coordinator has the authority to sign manifests for loads of hazardous waste and one-hazardous waste.
4. Fluorescent light tubes shall be managed as a hazardous waste (universal waste), boxed, and sent to the rear of Building 305.
5. The disposal of partially or completely filled chemical containers is prohibited at JPL.
6. All waste containers shall be closed when not adding or removing contents.
7. Subcontractor is responsible for properly segregating hazardous waste.
8. Subcontractors shall supply its own roll off bins and drums (must meet D.O.T. specs) for hazardous waste accumulation and transport.

C. AIR QUALITY

1. Subcontractor shall post applicable equipment operating permits as necessary. Contact the EPAPO for any questions regarding proper permitting requirements.
2. Contaminated wipes shall be disposed of as hazardous waste. Used or contaminated rags shall be contained when not in use.
3. Subcontractor shall use compliant paint gun(s). Prior to use of paint gun(s), contact JPL EPAPO Representative to ensure the use of paint gun(s) has been approved and/or is appropriate to use.

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4. JPL falls under the South Coast Air Quality Management District requirements; therefore all Subcontractors shall use material which is compliant with these standards.
5. Subcontractor shall report usage and emissions from their internal combustion engines directly to the South Coast Air Quality Management District as required if operated under 72 hours/quarter, and shall provide name, address and type of work performed to the JPL Environmental representative.

D. RUBBISH AND RECYCLABLE MATERIAL

1. If Subcontractor construction activity is expected to generate debris in excess of 10 cubic yards over the course of the activity, Subcontractor shall procure a separate dumpster specified for the debris and arrange for its disposal. Plant material and soil shall be disposed of by the Subcontractor and not placed in JPL bins.
2. Only scrap metal is allowed in the JPL scrap metal roll-off bin.
3. Only cardboard waste is allowed in the JPL cardboard bin.

E. WASTEWATER

1. Prior approval must be obtained from the JPL EAPO Representative before Subcontractor washes any material into the sanitary sewer system.
2. Subcontractor shall under no circumstances wash any materials outside without prior approval from the JPL EAPO Representative.
3. All chemical containers greater than five (5) gallons shall have secondary containment and be covered when stored outside.

F. SOIL

1. Subcontractor shall contact the JPL EAPO Representative to pre-approve all disposal sites to which JPL soil and asphalt is sent.
2. In case of an unusual odor or color in the soil, Subcontractor shall contact the JPL EAPO Representative for resolution determination.
3. All soil storage piles must be covered by plastic unless exempted by the JPL EAPO Representative. If Subcontractor requests soil storage piles remain uncovered, Subcontractor will contact EAPO for a determination.

G. CHEMICALS BROUGHT ON PREMISES

1. No ozone depleting chemicals allowed for cleaning purposes may be used at JPL: See List: <http://www.epa.gov/docs/ozone/ods.html>
2. No NESHAP Halogenated Solvents allowed for cleaning purposes may be used at JPL: Carbon Tetrachloride, Chloroform, Methylene Chloride, Perchloroethylene, Trichloroethylene, and 1-1-1-Trichloroethane.
3. Restricted use of Volatile Organic Compounds (VOC) for cleaning purposes: Subcontractor shall contact JPL OSPO and EAPO Representatives for prior authorization to use any VOC at

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4. The JPL Environmental Representative will review Subcontractor chemical information and advise Subcontractor on the proper disposal of the container per JPL requirements for all targeted chemicals procured or otherwise brought on premises by Subcontractor. Subcontractor must provide a list of the identified chemical(s) along with the MSDS to the JPL EAPO Representative. Such list shall be included in the JPL Safety Manual in accordance with Section VI of this document.

VI. MANDATORY DOCUMENTATION / SAFETY MANUAL

To the extent required by Applicable EH&S Standards above, the following documents shall be provided to the JPL Subcontracts Manager in a Safety Manual at least 10 days prior to start of work.

- Injury and Illness Prevention Program (IIPP), including documentation forms. (CCR, Title 8, Section 3203)
- Experience Modification Rate (EMR) document(s)
- Hazardous Communication Program. (CCR, Title 8, Section 5194)
- Site specific safety plan, detailing procedures for site specific activities. (CCR, Title 8, Sections 3203 & 1509). A sample Site Specific Safety Plan is found at: <http://acquisition.jpl.nasa.gov/>. Site specific permits required, such as trenching and shoring, (CCR, Title 8, Section 1503); confined space entry, (CCR, Title 8, Section 5157); asbestos abatement notification, (CCR, Title 8, Section 1529)
- Required certifications and/or training records of employees as stipulated in this document. (CCR, Title 8, Section 3203)
- Medical approval to wear respiratory protection. (CCR, Title 8, Section 1531, 5144)
- Medical approval to work with, but not limited to asbestos, cadmium and lead. (CCR, Title 8, Section 1529, 1532 & 1532.1)
- Hearing Conservation Program (CCR Title 8, Sections 5095-5100)
- Bloodborne Pathogens Program (CCR Title 8, Section 5193)
- Respiratory Protection Program (CCR Title 8, Section 3409 and 5144)
- Heat Stress Program (CCR Title 8, Section 3395)
- Lockout/Tagout/Blockout (CCR, title 8, Section 3314).
- Baseline medical eye exam for Class 3B and 4 laser users, (ANSI Z136.1,Section 6.3.1)

JPL SUBCONTRACTOR ENVIRONMENTAL, HEALTH & SAFETY REQUIREMENTS

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- Training Documentation: Proof of training in the following areas for all personnel working on the job site:
 - asbestos and lead
 - confined space
 - hazard communication
 - fall protection
 - mobile crane operations
 - scaffold erection/dismantling
 - respiratory protection
 - power-actuated tools
 - industrial/lift trucks (forklifts) and tractors
 - electrical
 - elevating work platforms and aerial devices
 - excavation
 - lockout/tagout/blockout
 - heat stress
 - roofing operations
 - welding and cutting safety
 - LASER