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| JPL Subcontractor Environmental, Safety and Health Plan Requirements – Form 2885 |

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| **Legal Company Name /Subcontractor**     **JPL Construction Mgr. or Contract Technical Mgr.**      | **Lower-tier subcontractors included under this plan (if applicable)**      |
| **Project Location**JPL 4800 Oak Grove DriveBuilding/Room/AreaOther (list address)      | **Project Duration and Working Hours**      |
| **Subcontractor Onsite Contact Information**Name:      Phone:      Email:       | **Legal Company Name/Subcontractor****Emergency Contact Information**Name:      Phone:      Email:       |
| **Individual That Prepared this Document**Name:      Phone:      Email:       | **The Document was Prepared****Date:**       |

**The following were identified as relevant to your Scope of Work.**

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|  |  |

*\* The Introduction, General Safety, Communicable Disease Transmission, Documentation and Additional General Safety, and Definitions sections, apply to all services.*

1. **[Introduction](#IntroGeneralCommunicableDisease)**

Subcontractor agrees as follows:

1. Subcontractor will 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.
2. Subcontractor will comply with all JPL-specific environmental, health and safety requirements (“JPL EH&S Requirements”).
3. Subcontractor will comply with all applicable federal, state and local laws and regulations.
4. Subcontractor will ensure all lower-tier subcontractors comply with all applicable federal, state and local laws and regulations; Subcontractor’s approved safety and health program; and all JPL EH&S Requirements. Subcontractor will include the substance of this document in all lower-tier subcontracts issued under the Subcontract.
5. The Subcontractor will provide their employees and lower-tier subcontractors with the information contained in the Safety and Health Plan (SHP).

*Note: This document addresses JPL EH&S Requirements and certain legal requirements as applied at JPL.*

1. **[General Safety](#CommunicableDiseaseTransmission)**

Subcontractor agrees as follows:

1. Emergencies/Incidents and Mishap Reporting
2. Subcontractor will call 911 from any JPL landline phone in the event of an emergency, Dial (818)393-3333 or (818) 354-3333 from a cell phone or non-JPL phone and provide name, company, the nature of the problem and the location. For work being performed at Goldstone or Table Mountain Facility, refer to specific local emergency procedures at those facilities.
3. Subcontractor will notify the CM or the CTM of all mishaps and close calls, and must notify OSPO via the Immediate Mishap and Close Call (IMACC) Reporting Line (818) 354-2141 within 1 hour from the time of incident.

1. **[Communicable Disease Transmission](#IntroGeneralCommunicableDisease)**
2. All JPL subcontractors are expected to follow the Cal-OSHA COVID -19 requirements, please refer to the link for information <https://www.dir.ca.gov/dosh/coronavirus/>.
3. If a subcontractor is feeling sick/ill or has flu or cold-like symptoms, they are not to report to on-site work at any JPL location/facility. If they experience symptoms or feel ill while working onsite, they are to notify their JPL onsite resource, inform their employer, and go home immediately. <https://acquisition.jpl.nasa.gov/terms-conditions/>

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1. **[Documentation and Additional General Safety](#DocumentationAndAdditionalGeneralSafety)**
2. To the extent a Subcontractor Statement Of Work (SOW) involves tasks to which the requirements in this document apply, Subcontractor will submit a Safety and Health Plan (SHP), identifying all tasks, their associated potential hazards, and their prescribed controls, as required by 8 CCR §3203 and §1509. Additionally, the SHP will be accompanied by the applicable documents described in the sections below. All documents will be provided to the JPL Acquisitions Subcontract Manager (SCM) and/or JPL Occupational Safety Program Office (OSPO) lead prior to the commencement of tasks.
3. For construction subcontractors and projects, a sample SHP is found at: <http://www.jpl.nasa.gov/acquisition/terms-conditions>.
4. In accordance with regulatory requirements and provisions of the Subcontract, Subcontractor agrees to maintain all applicable written SHP documents and permits at the work location (IIPP, SHP, Hazard Communication, Confined Space, etc.), along with documentation of employee safety and health training and medical clearances as required by applicable regulations.
5. Subcontractor is responsible for the safety of all individuals who enter the work area (including the CM, CTM and JPL staff). Subcontractor understands that neither the CM or CTM is a safety professional. The CM or CTM will provide Corrective Action Reports (CARs) issued by JPL OSPO for non-compliant conditions identified by JPL and affecting JPL or Subcontractor personnel. JPL will provide written notifications of non-compliance for safety conditions created by the Subcontractor’s operation affecting JPL or Subcontractor personnel. The Subcontractor will immediately address all non-compliant condition(s) and provide documentation to JPL of the actions taken to remedy the non-compliance.
6. Subcontractor will operate and maintain their own tools, equipment and safety equipment, such as Personal Protective Equipment (PPE). JPL safety equipment will not be provided to the Subcontractor.
7. Subcontractor will submit, and wait for acceptance of, any permits required by JPL or Cal/OSHA prior to starting that work.
8. Subcontractor will ensure that all precautions are taken to avoid exposure of any persons to any hazards when Subcontractor is performing work in areas where hazards are or might be present.
9. Subcontractor acknowledges that Hazardous Materials Information, relevant to JPL involvement with the project, has been provided as required by the Hazard Communications Standard, 8 CCR §5194.
10. Subcontractor agrees that safety is a priority in the performance of work under this Subcontract. As such, a subcontractor employee or affiliate that endangers the safety of any personnel or violates any safety ordinance, rule or law may be escorted off the Lab.
11. Subcontractor will ensure that all subcontractor employees view the Safety Awareness Orientation Video prior to starting work. The video can be accessed under the Supporting Documents tile at <http://www.jpl.nasa.gov/acquisition/terms-conditions/>.

1. **[Definitions](#Definitions)**
* California Code of Regulations (CCR) – California regulations, in particular those that apply to safety and health. CCR, Title 8 contains California Occupational Safety and Health Administration (Cal/OSHA) requirements; CCR, Title 17 contains California Department of Public Health (CDPH) requirements. The CCR may be accessed online at:
	+ Complete CCR: <https://govt.westlaw.com/calregs/index>
* Cal/OSHA: <https://www.dir.ca.gov/dosh/LawsAndRegulations.htm>
* Construction Manager (CM) – The JPL Facilities Construction Manager assigned to the particular project. The CM, in addition to managing the project from the JPL perspective, serves as the contact/liaison between the Subcontractor and OSPO.
* Contract Technical Manager (CTM) – The JPL Contract Technical Manager who represents JPL and manages the technical direction of the subcontract. The CTM also serves as the contact/liaison between the Subcontractor and OSPO.
* Subcontracts Manager (SCM) – The JPL SCM manages the Subcontract in all aspects, other than those of a purely scientific or technical nature. Only the JPL SCM has the authority to coordinate the issuance of Subcontract modifications. No other individuals have this authority, either formally or informally*.*
* Environmental Affairs Program Office (EAPO) – The JPL office responsible for validating that the SHP developed by the Subcontractor and includes applicable environmental requirements.
* Occupational Safety Program Office (OSPO) – The JPL office and staff that are responsible for safety risk assessments and compliance. OSPO staff include the subcontracts Safety and Health Plan reviewers for both construction and general acquisitions, Subject Matter Experts (SMEs) and OSPO organizational representatives who will be performing compliance inspections of Subcontractor activities.
1. **Safety Requirements Applicable to Subcontract**

**Submit a Safety/Health Plan that addresses each of the identified items checked off on page 1, per the JPL Subcontractor Environmental, Health, and Safety Requirements –Form 2885. It is the Subcontractor’s responsibility to identify and address any safety and health requirements.**

1. *[Asbestos Containing Material (ACM)](#Asbestos)* [– Subcontractor will consider all building materials that have been historically associated with asbestos as ACM until proven otherwise. JPL maintains a database of materials that have been sampled; reports are available upon request for an area or material in question.](#Asbestos) *Note that subfloor areas under raised computer floor tiles have been found to contain ACM. Entry into subfloors is prohibited without the proper training and respiratory protection.*

*Note: In general, for non-construction, the Subcontractor Scope of Work should not include the attachment of cabinets, shelves or other equipment or equipment components to floors, walls or ceilings, that involves drilling holes, putting in screws or breaching any building components. If acceptance, performance or warranty of the product is contingent on Subcontractor installation, as described here, the Subcontractor will comply with the asbestos requirements below, and provide justification.*

1. Subcontractor will request the CM or CTM provide an asbestos report identifying the specific locations of the ACM prior to cutting, drilling, demolishing walls, floors, or ceilings.
2. If ACM is identified in the respective survey report listed above for materials within the SOW, the Subcontractor must submit an Asbestos Work Plan in compliance with 8 CCR §1529 and subcontractor personnel must be trained to work around asbestos containing materials (ACMs). This requirement includes asbestos abatement subcontractors (Class I & Class II work) and subcontractors who have Class III, Operations and Maintenance (O&M) training, respirator fit testing and medical clearance, who are trained to perform Class III O&M work.
	* 1. All Work Plans for Class I, II, III or IV work will be reviewed by OSPO.
		2. If the Subcontractor will access a ceiling plenum where ACM is present in any amount, and a likelihood exists that ACM will be disturbed, the Subcontractor’s Work Plan will provide detailed procedures to be implemented to protect subcontractor personnel and the surrounding areas.
		3. The Work Plan must include detailed procedures for cleanup in the event of an accidental disturbance of ACM.
		4. If performing abatement work, an Asbestos Abatement Work Plan (AAWP) is required prior to start of work.
3. If Subcontractor discovers, during the course of work, unanticipated Presumed Asbestos Containing Material (PACM) and/or suspect ACM, Subcontractor will stop work immediately and notify the CM or CTM at once with information regarding the location and quantity.
	1. When asbestos abatement is performed, prior to tearing down containment, area/clearance air monitoring will be performed by a third party, a State of California, Division of Occupational Safety and Health (DOSH), Certified Asbestos Consultant (CAC), or a DOSH Certified Site-Surveillance Technician (CSST) working under the direct supervision of a CAC.
		1. Third party CAC will provide all reports to the CM or CTM prior to completion of the project.
	2. All subcontractors performing asbestos related work will comply with 8 CCR, Section 1529 Asbestos and South Coast Air Quality Management District (SCAQMD) Rule 1403.
	3. Personnel are not allowed to enter above ceiling plenum spaces (above ceiling tiles) before they have established if asbestos fireproofing is present on structural members such as beams, decking and columns.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Bloodborne Pathogens/Biohazards](#BloodbornePathogensBiohazards)*
2. Subcontractors whose work exposes them to bloodborne pathogens will submit a copy of the subcontractor’s bloodborne pathogen exposure control plan.
3. Subcontractors whose work involves the handling of biological materials such as human cells, microorganisms that are potentially infectious to humans and can cause disease in humans and/or recombinant DNA will need to provide the OSPO Biosafety Program a list of organisms (include source of material, risk group). If applicable provide subcontractor’s institutional biosafety committee approval.
4. JPL Biosafety Program will alert CTM and subcontractor if the planned use of the biological material will require submittal of a Caltech Institutional Biosafety Safety Committee protocol application.
5. Subcontractors bringing biological materials onsite will need to ensure materials are appropriately packaged and shipped according to DOT and IATA requirements.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

☐ Accept                    Provide hazard mitigation description:         Click or tap here to enter text.

☐ Not Applicable       Explain (required if N/A):  Click or tap here to enter text.

1. *[Chemicals/Hazardous Material Use](#ChemicalsHazardousMaterialUse)*
2. It is the Subcontractor’s responsibility to ensure that their personnel receive adequate training and information regarding the hazardous associated with the chemicals they will be working with. This includes the use of chemicals that are already available onsite. It is the Subcontractor’s responsibility to ensure that the use, handling, storage, transport of chemicals by the subcontractor is performed in the manner that will not create a health or physical hazard to building or area occupants. For chemicals/hazardous materials that are being brought on-site by the Subcontractor, the Subcontractor will submit to OSPO and the JPL Environmental Affairs Program Office (EAPO), current Safety Data Sheets (SDSs) and a completed “Outside Contractor Chemical Form” (7458) for each chemical. The form is available under the “Supporting Documents” tile at <http://www.jpl.nasa.gov/acquisition/terms-conditions/>.For chemicals that are already onsite and will be used by the contractor, obtain copies of the SDSs from CTM.

*Note: The EAPO may request the Subcontractor keep a usage log of chemicals that have regulated usage limits.*

1. Subcontractor will report immediately all spills to the CM or CTM. If the spill results in an immediate hazard to subcontractor or JPL personnel or property, Subcontractor will call the on-Lab JPL Emergency number (818) 393-3333 for assistance. Subcontractor will contain and clean up all spills when directed based upon a determination of the hazard made by the JPL Fire Department.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard including but not limited to:

* + how the material will be used,
	+ scale of use (quantity used, duration, frequency),
	+ if there is potential impact to building/location occupants (odors/dust/etc.) and necessary mitigations should be described below.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Confined Space Entry](#ConfinedSpace)*
2. Subcontractor will contact the CTM to obtain the following regarding a confined space:
	* 1. Classification of space and the cause for permit if identified as a Permit Required Confined Space
		2. Hazards and operations within or near the space
		3. Precautions implemented for personnel safety
3. Subcontractor will obtain a “Confined Space Entry Permit”, Form 2702, located under the Supporting Documents tile at <http://www.jpl.nasa.gov/acquisition/terms-conditions/> to allow and control entry into a confined space requiring such permit, in accordance with 8 CCR §5157.Temporary reclassification to Alternate Entry or Non-Permit Entry conditions of confined spaces will be documented on this form.
4. Subcontractor will provide 24-hour advance notice to the CTM prior to scheduling entry into a confined space. At this time, Subcontractor will provide site specific entry plans, including emergency rescue procedures.
5. Subcontractor will provide the CTM with a copy of completed Confined Space Entry Permits after the operation is complete.

*Note: Confined spaces found at JPL include, but are not limited to:*

* + 1. Manholes;
		2. Cooling towers;
		3. Elevator pits
		4. Ground tanks (underground and above ground);
		5. Underground tunnels; and
		6. Environmental test chambers.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Electrical Safety](#ElectricalSafety)*
2. Electrical subcontractors engaged in construction-related tasks are required to employee qualified electrical workers, as defined by Cal/OSHA. These workers shall possess a valid certification from the State of California, authorizing them to perform the installation, repair, and maintenance of electrical systems and wiring. Subcontractor’s qualified electrical workers are also expected to hold valid training certifications for NFPA 70E, first aid and cardiopulmonary resuscitation (CPR). To obtain safety plan approval, please provide confirmation of qualified worker status using your company's official letterhead and include their up-to-date training certifications for assessment.

1. Subcontractor will ensure that all electrical work is performed on de-energized electrical circuits and equipment that are properly Locked and Tagged Out (LOTO) if applicable.
LOTO does not apply on plug and cord-connected electrical equipment if the plug is under the exclusive control of the employee performing the service or maintenance. Exclusive control means in the physical possession of the employee, or in arm's reach and in line of sight of the employee.

*Note: Refer to Section Lockout/Tagout (LOTO) section, of this document for additional requirements.*
2. If de-energizing introduces additional or increased hazards, or is infeasible due to equipment design, operational imitations, or maintenance requirements, Energized Electrical Work will be performed by a written “Energized Electrical Work Permit”, Form 7029, located under the Supporting Documents tile at <http://www.jpl.nasa.gov/acquisition/terms-conditions/>.
3. Electrical subcontractors will submit, as part of the SHP, an Electrical Safety Plan documenting their electrical safety program that directs activity appropriate to the risk associated with electrical hazards, in compliance with the latest edition of NFPA-70E requirements.
4. Subcontractor will perform and document Electrical Hazard Analysis before work is performed on live equipment operating at 50 volts or higher, such as testing and trouble shooting.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Provide hazard mitigation description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *Elevated Work*
2. Subcontractor will ensure that all subcontractor personnel whose work exposes them to falling in excess of 6 feet from the perimeter of a structure, unprotected sides and edges, leading edges, through shaft-ways and openings, sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees and whenever within 15 feet from an unprotected elevated edge will wear personal fall arrest, personal fall restraint equipment. This potential exposure hazard will be identified within the Subcontractor’s Safety and Health Plan (SHP). All fall protection systems identified for use must be approved by the subcontractor’s appointed fall protection qualified person and inspected by the Subcontractor’s onsite Cal/OSHA required competent person prior and throughout use.
3. Subcontractor’s fall protection qualified person will utilize the following preferred order of hierarchy of controls when creating the fall protection plan to eliminate or reduce fall hazards:
	* 1. Hazard Elimination (preferred).
		2. Passive Fall Protection (physical barriers like guardrails around unprotected edges and covers over holes are examples of passive fall protection);
		3. Fall Restraint Systems; and
		4. Personal Fall Arrest Systems.
4. When fall protection equipment is to be worn, Subcontractor will submit, as a part of the SHP, a Fall Protection Plan/Procedure including:
	* 1. A detailed description of work;
		2. Identification of the onsite Cal/OSHA required competent person in fall protection;
		3. A schematic of any fall protection systems, and anchors used;
		4. Identification of all fall protection equipment that will be used; and
		5. Rescue Plan – Detailed rescue plan in the event that an employee has been subjected to a fall. If JPL’s Fire Department will be used as part of the written Rescue Plan than coordination must be made with the JPL Fire Department prior to the start of work.
5. Subcontractor will ensure that a *competent person* (8 CCR §1671.1) implements the fall protection procedure/plan; inspects all fall protection equipment including all personal fall arrest systems every six months for wear, damage, and other deterioration; and removes defective components from service. Subcontractor personnel wearing fall protection equipment will inspect, prior to each use, looking for wear, damage, and other deterioration, and such personnel will remove defective components from service. Inspections will be made within the prior 6 months per Cal/OSHA. This semi-annual inspection will be denoted on the fall protection equipment inspection tag.
6. Subcontractor will submit a copy of Subcontractor’s current Cal/OSHA permit for all scaffolding (erection or dismantling) over 36 feet.
7. Subcontractor will ensure that a *competent person* (8 CCR §1671.1) inspects all scaffolds daily and denotes the inspections on a green scaffold inspection tag. Incomplete or defective scaffolds will be red tagged. The appointed scaffold competent person will be identified in the SHP.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Fire Protection Systems](#FireProtectionSystems)*

Subcontractor will contact the CM or CTM to work with the JPL Fire systems CTM, JPL Fire Department or the JPL Authority Having Jurisdiction (AHJ) to turn off, or turn on, the fire protection system. No subcontractor, except the Fire Sprinkler and Fire Alarm vendors may operate a fire protection system other than a preapproved new vendor or the JPL Fire Department. Vendors must be approved by the AHJ or designee and the JPL Fire Systems CTM Note: Just because a vendor has a C-16 license does not automatically mean they can work on a JPL sprinkler system. C-16 does not include Fire Alarm system.

* 1. Subcontractor will document and receive approval of the JPL Fire systems CTM, JPL Fire Department or the JPL Authority Having Jurisdiction (AHJ) of any impairment of a fire protection system. The CM must be notified if the impairment lasts longer than 8 hours.
	2. Subcontractor will contact the CM or CTM to obtain the approval of flammable cabinet use in subcontractor workspaces. Approval is granted by registering cabinets in the OSPO Flammable Liquids Storage Cabinet Inventory

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Food Service Safety](#FoodServiceSafety)*
2. Subcontractor offering food will provide in the SHP a written food safety and sanitation plan. Subcontractors who will be offering food must comply with the California Retail Food Code and County of Los Angeles Public Health. In the SHP, briefly document:
3. Vendor's business license to operate;
4. Vehicle license plate and driver’s license;
5. Manager/handler food safety certification (e.g., ServSafe or equivalent);
6. Health department permit verifying inspection by the local health department;
7. A copy of the menu items offered;
8. Food and beverage products that will be prepared, sold or given away;
9. Method of food temperature control during transportation from vendor;
10. Identify methods of reheating hot food (135°F), only for food not consumed immediately;
11. Identify methods of maintaining food hot (135°F) or cold (41°F);
12. Identify equipment that will be used for food preparation at the food booth;
13. Handwashing and utensil washing/sanitation stations are required for food preparation; and
14. How will the food waste and garbage be handled and removed at the end of the service.

1. For retail activities where open flames are present, a Hot Work Permit will be required (See Hot Work Permit section).

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Hearing Conservation](#HearingConservation)*
	1. In areas with elevated noise levels (>85 dBA), the subcontractor will ensure their employees wear hearing protection.
	2. Subcontractors will survey noisy locations to determine if they are hazardous noise areas in accordance with the following requirements:
		1. For continuous noise set sound level meters at “slow” response and A weighting.
		2. For impulse noise set sound level meter at “fast” response and C weighting.
		3. Noise exposure limit (Criterion Sound Level (CSL)) 85 dBA, Time Weighted Average (TWA), 3-dB exchange rate.
		4. Noise Action Level 82 dBA, TWA, 3-dB exchange rate.
	3. Resident subcontractors will:
		1. Establish a Hearing Conservation Program and include employees whose noise exposure equals or exceeds an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A-scale (slow response), or whose noise exposure exceeds an 8-hour time-weighted average sound level (TWA) 82 dBA over the course of 30 days in a given year.
		2. Post signs to clearly indicate the presence of hazardous noise (>85 dBA) and state the requirement to wear hearing protection.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Hot Work Permits (Hot work is any work involving burning, welding, grinding, cutting or similar operations capable of initiating fires or explosions)](#HotPermits)*
2. Prior to starting any hot work (e.g. welding, cutting, grinding or other hot work), Subcontractor will obtain a Hot Work Permit through JPL Fire Department with notification to the CM or the CTM.
3. A copy of the Hot Work Permit will be displayed prominently at the work location.
4. Subcontractors are required to have available and provide:
	* 1. Welding blankets;
		2. Fire extinguishers;
		3. Fire Watchers; and
		4. Welding Screens.
	1. Fire watchers and fire extinguisher users must be trained and comply with 8 CCR, §4848, Fire Prevention and Suppression Procedure.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Human Factors (Work-Rest Cycles)](#HumanFactors)*[,](#HumanFactors) as related to safety, involves fatigue and stress that may lead to accidents. If Subcontractor personnel will be working greater than 60 hours/week over a two-week period that involves (1) flight hardware and software, test items, or test facilities, (2) is on a task that is known to require extended work hours or varying work schedules, and (3) is scheduled and planned in advance, Subcontractor will submit, as part of the SHP, a Human Factors mitigation plan. The plan must include monitoring of Subcontractor personnel, and provide transportation and lodging for persons who are at risk. Any Subcontractor personnel on a Human Factors mitigation plan that requires transportation or lodging will be reimbursed for reasonable expenses through their employer.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Laser Use or Service on Laser Equipment](#Lasers)*
2. Subcontractor will submit, in the SHP, a Laser Safety Plan if service or use of Class 3B or Class 4 lasers could result in accessible laser radiation.
3. Any outdoor use of open-beam lasers of Hazard Class 3R (3A), 3B or 4 requires an Outdoor Laser Safety Plan, approved by the JPL Laser Safety Officer (LSO). The CM or CTM will coordinate with LSO to obtain requirements.

*Note: Most construction lasers (such as levels) are Class 2 and are exempt from this requirement. Similarly, LIDAR instruments that are Class 1 lasers are exempt.*

* 1. Service of equipment containing Class 3B or Class 4 lasers requires a Laser Safety Plan if interlocks are defeated and hazardous laser radiation is accessible, approved by the LSO. The Laser Safety Plan must include:
		1. Description and Location of the equipment;
		2. Description of the service to be provided;
		3. Description of the mitigations that will be used to prevent persons from being exposed to hazardous laser radiation, including temporary barriers, signs and procedures;
		4. Description of Laser Protective Eyewear to be utilized; and
		5. If equipment energy source is subject to Lockout/Tagout requirements. For LOTO requirements, refer to LOTO section of this document.
1. Construction of facilities designed for use of Class 4 lasers will be according to plans approved by the LSO.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Lead](#Lead)* [– Subcontractor will consider all building materials that have been historically associated with lead paint as Lead Containing Material (LCM) until proven otherwise. JPL maintains a database of materials that have been sampled; reports are available upon request for an area or material in question](#Lead)*. Subcontractor will consider all paint in buildings as lead-containing until proven otherwise.*
2. Subcontractor will submit, in the SHP, a Lead Work Plan, to be approved by OSPO. Subcontractor will request the CM or CTM provide a lead report identifying the specific locations of the LCM prior to cutting, drilling, demolishing walls, floors, or ceilings.
3. Lead shielding materials must be disposed of according to the Hazardous Waste section in the Environmental requirement section of this document.
4. Installation of lead shielding materials or leaded glass for radiation shielding will be according to a Radiation Shielding Specification and approved by the RSO (see the section on Radiation Sources).

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Lifting Operations and Lifting Permits – Forklifts, Cranes, Hoists](#LiftingOperations)*
2. Subcontractor will submit five business days in advance of the activity, in the SHP, a Lift Plan for any mobile lifting and elevating operations.
3. Included with the Lift Plan, Subcontractor will submit a completed “Lift Permit”, Form 7118. The permit may be located at <http://www.jpl.nasa.gov/acquisition/terms-conditions/>.

*Note: The JPL Lifting Devices Equipment Manager (LDEM) will review the Lift Plan for work involving Mobile Crane Lift Operations and non-routine lifts.*

1. Subcontractor will ensure that operators of forklifts and all lifting equipment will be trained and competent to operate such equipment safely. Operators of boom lifts will be licensed. Records of licenses and training will be available for inspection at the work location.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Lockout/Tagout (LOTO)](#LockoutTagout)*
	1. For the purposes of lockout/tagout, only red padlocks will be used. Locks will be individually keyed.
	2. Each lock will be installed along with a standard JPL lockout tag stating “Do Not Operate.”

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Pressure Vessels and Systems](#PressureVessels)*

a) Any work on Pressure or Vacuum Systems to include: gas, compressed air, piping, cyrogenic vessels and piping, building gas vent systems must be reviewed, inspected and certified by the JPL Pressure Systems Manager (PSM). Subcontractor will submit, in the SHP, a Pressure Systems Work Plan to the CM or CTM that includes: scope of work, type of operations, listing of pressure equipment (e.g. air compressors, gas cylinders, etc.), and procedures for de-pressurizing equipment if necessary, and any testing conducted to verify work.

b) Subcontractors performing work at JPL Oak Grove Site and Table Mountain Facility that will involve the use of pressurized gases via compressed gas cylinders to include oxy/acetylene, air compressors, etc. will ensure the following:

1. All compressed gas cylinders will be transported, used, and stored in a vertically upright and secured position in accordance with all applicable regulatory regulations.
2. Air compressors with air receivers brought on site will have a valid/current California Permit in accordance with all applicable regulatory requirements, including but not limited to Title 8, Chapter 4, Subchapter 1, Article 3 of the CCR.
3. Pressure vessels and DOT containers used to transport fluids under pressure provided by the sub-contractor shall comply with the DOT regulations of 49 CFR 171-180 as applicable, and shall be certified based on the DOT requalification intervals for the specific cylinder specification.
4. Work involving modification or welding to ASME pressure vessels, vacuum vessels, or piping shall only be conducted in accordance with appropriate ASME BPVC or B31.3 code requirements and the California Code or Regulations CCR Title 8. Welding Performance Schedules (WPS), Weld Performance Qualifications (WPQ), Performance Qualification Records (PQR) must be submitted to the JPL PSM for review and approval prior to welding tasks.
5. Subcontractor will ensure that all pressure systems work is performed on de-energized/de-pressurized pressure lines and equipment, and the pressure source is properly Locked and Tagged Out (LOTO). Please refer to LOTO section of this document for additional details.
6. Prior to the start of work, pressurized components including regulators shall be fully vented (both upstream and downstream) to ambient pressure.
7. Pressure/leak testing of piping shall be recorded indicating system design pressure and test pressure.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Radiation Sources / X-Ray Use](#RadiationSources)*
2. For radioactive sources, electron beam equipment and/or x-ray equipment to be used on-site at JPL, Subcontractor will:
	* 1. Provide, along with the SOW, a copy of the Subcontractor’s Radioactive Material License or X-Ray Machine Registration Certificate for the CM or CTM to review. Requests will be made at least five business days prior to bringing such materials and/or equipment to JPL.
		2. Perform the work according to any requirements made by the JPL Radiation Safety Officer (RSO).
3. The use or service of non-ionizing radiation sources is exempt from the requirement for a SHP, except when the equipment emits radiation above the relevant limits of IEEE C95.1, or FCC limits.
	* 1. Ground-Penetrating Radar is generally considered exempt.

1. Following service on any radiation-emitting source, it is the Subcontractor’s responsibility to ensure that equipment is returned to service in compliance within applicable CCR Title 17 radiation dose limits. In order to validate compliance, a radiation survey must be performed, documented and accepted :
	* 1. By the JPL RSO or designee prior to acceptance by the CTM, or
		2. By the JPL RSO or designee at a later time.

*Note: The JPL RSO conducts annual radiation surveys to ensure that equipment is constantly compliant; if equipment is found to be emitting radiation above the dose limits after service, it is the obligation of the Subcontractor to return the equipment to compliance without additional cost.*

1. If equipment energy source is subject to LOTO requirements, refer additionally to the LOTO section of this document.
2. Construction of facilities, rooms or vaults in which radiation sources are to be utilized shall be performed according to the requirements of a Radiation Shielding Specifications document, approved by the JPL RSO.
	* 1. The RSO will inspect the facility and approve the construction prior to use.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Seismic Anchoring](#SeismicAnchoring)*
	1. This requirement applies only to equipment or furniture being installed without a JPL Facilities Service Request (FSR).
	2. If equipment meets any of the following criteria, seismic anchoring will be required pursuant to California Building Code, Chapter 16, Section 1613, Earthquake Loads. Example criteria is listed below, but Subcontractor should be aware that these examples are not all-inclusive:
		1. Weighs over 400 pounds (lbs.);
		2. Weighs over 20 pounds and the center of mass is four (4) feet above the base;
		3. Is attached to the roof or ceiling;
	3. Subcontractor will submit, as part of the SHP, a description of how the equipment will be seismically anchored.

*Note: For products manufactured in California, Subcontractor will additionally offer the ability to anchor the equipment.*

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Transportation and Staging](#TransportationandStaging)*
2. For any operation that involves the delivery of equipment, supplies, etc., that will require blocking JPL roads or parking lots for more than five (5) minutes outside of the Subcontractor’s designated work area or designated staging areas, a Transportation and Staging Plan will be submitted to the CM or the CTM.
3. The Transportation and Staging Plan will be approved by the JPL Protective Services Division (PSD).
4. For operation of any utility vehicle i.e., golf carts, UTV, etc. the contractor will ensure their employees are trained or qualified to operate the vehicle in accordance with the vehicle’s owner’s manual and applicable regulatory requirements.
5. All Subcontractor motorized carts will be registered with the Protective Services Division (PSD).
6. Subcontractor personnel may never leave vehicles unattended with keys accessible to anyone other than those authorized to access the vehicle. Keys may not be left in unattended vehicles, even if obscured from sight.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Trenches and Excavations](#TrenchesExcavations)*
	1. Subcontractor will review all underground utility drawings with the CM or the CTM prior to any excavation or trenching operations.
	2. A completed JPL Excavation Permit will be obtained, prior to any digging operation (exception for hand digging 12 inches). The permit can be found at <http://www.jpl.nasa.gov/acquisition/terms-conditions>.
	3. Subcontractor will submit a copy of its Cal/OSHA Annual Permit and Written Notice to Dig prior to excavating, where applicable.
	4. Subcontractor will submit a Trenching and Shoring Plan, as a part of the SHP, for trenches and excavations deeper than five feet. If a trench or excavation will be deeper than 20 feet, a plan will be completed and signed by a Professional Engineer (PE) registered in the State of California.
	5. 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 CM immediately following discovery.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. **Environmental Requirements Applicable to Subcontract**

1. *[Air Quality](#AirQuality)*
	1. JPL is in the South Coast Air Basin and subject to South Coast Air Quality Management District (SCAQMD) regulations; therefore, all Subcontractors will use materials compliant with SCAQMD rules and regulations.
	2. Subcontractor will post equipment operating permits as necessary. Contact the EAPO Air Quality Program and JPL CM for any questions regarding proper permitting requirements.
	3. Subcontractor will use SCAQMD compliant paint gun(s). Prior to the use of paint gun(s), contact the EAPO Air Quality Program and JPL CM to ensure the use of paint gun(s) has been approved and/or is appropriate to use.
	4. Subcontractor will submit a Rental Generator Information Sheet, Form 7457, to the EAPO Air Quality Program for approval prior to delivery of any generator to JPL.
	5. For stationary source internal combustions engines, Subcontractor will log beginning and ending hour meter and/or fuel meter readings and submit the log at least monthly to the EAPO Air Quality Program and JPL CM.
	6. No ozone depleting chemicals may be used at JPL. For a listing of such chemicals see <https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances>
	7. No NESHAP Halogenated Solvents may be used at JPL (i.e.: Carbon Tetrachloride, Chloroform, Methylene Chloride, Perchloroethylene, Trichloroethylene, and 1-1-1-Trichloroethane)
	8. Restricted use of Volatile Organic Compounds (VOC) for cleaning purposes: Subcontractor will contact the CM and the EAPO Air Quality Program for prior authorization to use any VOC at JPL.
	9. Subcontractor to ensure emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area should not be visible in the atmosphere beyond the property line of the emission source.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Biohazardous/Medical Waste](#BiohardousMedicalWaste)*
2. Subcontractor is responsible for segregating, transporting, and disposing of biohazardous/medical waste off-site.
3. Subcontractor will prepare a biohazardous/medical waste plan and send a copy of the plan to EAPO.
4. Subcontractor will maintain onsite biohazardous/medical waste containers in a manner that is compliant with the California Department of Public Health and applicable state laws.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard. If subcontractor will be managing their own medical waste, please provide copy of the subcontractor’s medical waste plan.

☐ Accept                    Provide hazard mitigation description:         Click or tap here to enter text.

☐ Not Applicable       Explain (required if N/A):  Click or tap here to enter text.

1. *[Hazardous Waste](#HazardousWaste)*

*Note: Unless otherwise specified in the Subcontract, at the conclusion of the project Subcontractor will remove from the site all chemical containers with unused product (Onsite disposal or discharge of partially or completely filled chemical containers is prohibited).*

* 1. Subcontractor will coordinate with the CM and the EAPO Hazardous Waste Program for approval of any hazardous waste onsite accumulation, transport or disposal. Subcontractor is responsible for off-site disposal of hazardous waste.
	2. Subcontractor is responsible for properly segregating hazardous waste. Subcontractor will maintain onsite hazardous waste containers in a manner that is compliant with the Resource Conservation and Recovery Act (RCRA), and applicable state laws.
	3. Subcontractor will supply their own D.O.T. compliant containers for hazardous waste accumulation and transport.
	4. Subcontractor will ensure onsite hazardous waste containers are kept indoors (or covered if outside) and closed at all times except when adding waste to the container.
	5. Subcontractor-generated hazardous waste will be shipped by an EAPO Hazardous Waste Program-approved hazardous waste transporter to an EAPO Hazardous Waste Program-approved treatment/storage/ disposal facility (TSDF) within 90 days when the quantity limitation (1 quart of extremely hazardous or 55 gal of hazardous waste) is reached, or within nine (9) months of the waste accumulation start date whichever occurs first.
	6. Subcontractor will prepare Hazardous Waste transport and disposal documentation (i.e., Manifests, Land Disposal Restriction Forms and Profiles), and send copies of the draft documents to the EAPO Hazardous Waste Program for approval at least 72 hours prior to scheduled transport. Only the EAPO Hazardous Waste Program representative or designee has the authority to sign manifests for loads of hazardous waste or extremely hazardous waste.
	7. Subcontractor will manage all empty hazardous materials containers greater than five (5) gallons, and empty extremely hazardous waste containers, as hazardous waste.
	8. Waste fluorescent light tubes will be boxed and sent to the rear of Building 305.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Soils](#Soils)*
	1. If during excavation an unusual odor or color is detected in the soil, Subcontractor will stop work and contact the CM and the EAPO Soil Program for resolution.
	2. Onsite excavated soil piles must be covered by plastic unless exempted by the EAPO Soil Program.
	3. Subcontractor will not discharge any paint or other contaminated rinse water onto soils in or adjacent to JPL unless exempted by the EAPO Soil Program.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Solid and Non-Hazardous Waste (i.e., Non-Friable ACM, Construction Waste, etc.)](#SolidNonHazardousWaste)*
	1. Subcontractor will not use JPL solid waste containers for disposal of any waste without prior approval from the EAPO. Disposal of solid waste is the responsibility of the Subcontractor. Subcontractor will procure a waste container for solid waste it generates and will arrange for its disposal.
	2. Subcontractor will prepare Non-Hazardous Waste Manifests and Profiles, and send copies of the draft documents for approval to the EAPO Hazardous Waste Program at least 72 hours prior to scheduled transport. Only the EAPO Hazardous Waste Program representative or designee has the authority to sign manifests for loads of non-hazardous waste from JPL.
	3. Construction Waste – During the planning stage, the Subcontractor will consider local recycling and salvage operations that could process site-related waste. Unless JPL agrees that markets or onsite recycling opportunities do not exist, the Subcontractor will recycle or salvage at least 50 percent of construction, demolition and land-clearing waste, excluding soil.
	4. Subcontractor will ensure the proposed disposal facility is permitted to accept the waste being shipped. The disposal facility will be approved by JPL EAPO prior to shipment.
	5. Subcontractor may dispose of scrap metal in the JPL scrap metal roll-off bin.
	6. Subcontractor may dispose of cardboard in the JPL cardboard roll-off bin.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.

1. *[Water (Surface and Industrial Wastewater)](#Water)*

*Note #1: JPL surface waters (including all water conveyed in the storm drain system) discharge into the City of Pasadena’s Arroyo Seco under permit by a National Pollution Discharge Elimination System (NPDES) Storm Water General Permit. This permit requires JPL to develop and maintain a Storm Water Pollution Prevention Plan (SWPPP) to prevent storm water pollution into that area. Construction Stormwater Permits are temporarily obtained for onsite construction activities greater than 1 acre. These are allowed to expire at the conclusion of construction activities.*

*Note #2: JPL industrial wastewater (including all water conveyed in the sanitary sewer system) is regulated and monitored by the Los Angeles County Sanitation Districts (LACSD) through an Industrial Waste Discharge Permit.*

* 1. Subcontractor will obtain prior approval from the EAPO Water Program prior to washing any material into the sanitary sewer system or septic system (Table Mountain Facility).
	2. Subcontractor will under no circumstances wash or discharge any materials outside without prior approval from the EAPO Water Program.

**Subcontractor Response:**

JPL is looking for additional information surrounding why the hazard is applicable and how Subcontractor will mitigate the hazard.

[ ]  Accept Description: Click or tap here to enter text.

[ ]  Not Applicable Explain (required if N/A): Click or tap here to enter text.