

## 23. Required Permits

(See Jacobs Global Work Instruction JJ-HS-WI-0305-JJ, Safe Work Permits)

Safe work permits are used as a work control process for defined hazardous activities. The use of work permits may be required by clients or as a result of task risk assessment.

Safe work permits are mandatory for the following types of operations (others based on client or other requirements may be needed as well):

- Hot Work
- Confined Space Entry
- Excavations
- Line Breaking
- Energized Electrical Work
- Radiological Work Permit

Other required permits for this project are indicated below.

**Table 6-1. Required Permits**

Permit Type	Activities/Tasks
Confined Space Entry	
Energized Electrical Work	I&C Controls when near energized components that are not feasible to isolate/LOTO
Hot Work	Cutting of metal
Lockout/Tagout	Electrical work for GETS and working with the solar panels for the air monitoring systems
Other:	

Coordinate work with the project team and client's operations representative (if required) as necessary to ensure that a properly filled out work permit is issued and includes relevant supporting information:

- The hazards/impacts and limitations at the site are assessed;
- All precautions are taken and safe practices followed;
- A work area review is conducted prior to signing and authorizing work; and
- Verify by means of a signature that the work permit has been reviewed and limitations and controls measures understood

Inspect the permit and tasks to ensure the permit requirements are still being met. Immediately stop work and notify supervision if any changes in job conditions or hazards take place. Ensure the permit is closed out where required.

## 24. Records and Reports

An organized project filing system is essential for good documentation and recordkeeping. There are many benefits to an organized filing system:

- Other Jacobs employees can easily and quickly find documents;
- Records are readily available for review;
- Records may be needed during OSHA investigations, audits, or other legal matters;
- Records may be needed on short notice in case of an accident, illness or other emergency; and
- Systematic recordkeeping aids in overall project organization

The project filing system shall be established at the beginning of the project and maintained throughout all phases of construction and archived in accordance with Jacobs' Records Retention Policy. The information contained in the filing system shall be updated regularly and/or as specified in this document. The PM and SL are responsible for collecting documentation, including subcontractor documentation, and maintaining a complete and organized filing system.

Below are examples of records that must be maintained as the project progresses:

- Exposure records includes air monitoring data (including calibration records), MSDSs, exposure modeling results;
- Physical hazard exposure records include noise, ionizing radiation, non-ionizing radiation, vibration, and lasers exposure assessments and measurements;
- Respiratory Fit Test Records;
- Training Records;
- Injury/illness reports and investigations;
- Federal or State Agency Inspection Records; and
- Other Records
  - Ergonomic evaluations
  - HSE audits and assessments
  - Project-Specific HSE Plans
  - Equipment inspections
  - Equipment maintenance
  - BZOs
  - Self-Assessment Checklists

# Jacobs Health and Safety Plan

## Attachment 1

### Health and Safety Plan Employee Sign-off Form



# Jacobs Health and Safety Plan

## Attachment 2

### Chemical Inventory/Register Form



## CHEMICAL INVENTORY/REGISTER FORM

Refer to HSE Handbook for instructions on completing this form.

Location:
HCC:
<input type="checkbox"/> Office <input type="checkbox"/> Warehouse <input type="checkbox"/> Laboratory <input type="checkbox"/> Project:
Project No.:

Regulated Product	Location	Container labeled (✓if yes)	MSDS available (✓if yes)

MSDS for the listed products will be maintained at:
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# Jacobs Health and Safety Plan

## Attachment 3

### Chemical-Specific Training Form



## CHEMICAL-SPECIFIC TRAINING FORM

Refer to HSE Handbook for instructions on completing this form.

Location:	Project # :
HCC:	Trainer:

### TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

### REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:


The HCC shall use the product MSDS to provide the following information concerning each of the products listed above.

- Physical and health hazards
- Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and personal protective equipment to be used)
- Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants shall have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of MSDSs, chemical inventories, and Jacobs' written hazard communication program shall be made available for employee review in the facility/project hazard communication file.



# Jacobs Health and Safety Plan

## Attachment 4

### Project Activity Self-Assessment Checklists /Forms/Permits

Arsenic  
Benzene  
Demolition  
Drilling  
Earthmoving Equipment  
Electrical  
Excavations  
Fall Protection  
Forklifts  
Hand and Power Tools  
Hazardous Materials Handling  
Hexavalent Chromium  
Lead  
Manual Lifting  
Methylene Chloride  
Personal Protective Equipment  
Respiratory Protection  
Stairways & Ladders  
Traffic Control  
Vinyl Chloride

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project’s written safety plan.

This checklist is to be used at locations where: 1) CH2M HILL employees are potentially exposed to the hazards of earthmoving equipment operations, 2) CH2M HILL employees are operating earthmoving equipment, and/or 3) CH2M HILL provides oversight of a subcontractor operating earthmoving equipment.

The CH2M HILL Safety Coordinator may consult with subcontractors operating earthmoving equipment when completing this checklist, but shall not direct the means and methods of equipment operations nor direct the details of corrective actions. Earthmoving equipment subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazard until corrected.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_  
 Location: \_\_\_\_\_ PM: \_\_\_\_\_  
 Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

Evaluate CH2M HILL employee exposures to earthmoving equipment hazards (complete Section 1).  
 Evaluate CH2M HILL employees operating earthmoving equipment (complete entire checklist).  
 Evaluate CH2M HILL subcontractor’s compliance with earthmoving equipment safety requirements (complete entire checklist). Subcontractors Name: \_\_\_\_\_

- Check “Yes” if an assessment item is complete/correct.
  - Check “No” if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the earthmoving equipment subcontractor. Section 3 must be completed for all items checked “No.”
  - Check “N/A” if an item is not applicable.
  - Check “N/O” if an item is applicable but was not observed during the assessment.
- Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-306.

<b>SAFE WORK PRACTICES (5.1)</b>	<b><u>SECTION 1</u></b>			
	<b><u>Yes</u></b>	<b><u>No</u></b>	<b><u>N/A</u></b>	<b><u>N/O</u></b>
1. Personnel maintaining safe distance from operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Positioning personnel in close proximity to operating equipment is avoided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Personnel wearing high-visibility and/or reflective vests when close to operating equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Personnel approach operating equipment safely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Personnel riding only in seats of equipment cab and using seat belts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Personnel not positioned under elevated portions of equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Personnel not positioned under hoisted loads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Personnel not hoisted by equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Personnel do not to approach equipment that has become electrically energized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Personnel wearing appropriate PPE, per HSP/FSI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>EQUIPMENT SAFETY REQUIREMENTS PRIOR TO OPERATING EQUIPMENT (5.2.1)</b>	<b><u>SECTION 2</u></b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>N/O</b>
11. Only qualified and authorized personnel operating equipment		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Daily safety briefing/meeting conducted with equipment operators		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Daily inspection of equipment conducted and documented		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Modifications and attachments used approved by equipment manufacturer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Backup alarm or spotter used when backing equipment		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Operational horn provided on bi-directional equipment		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Seat belts are provided and used		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Rollover protective structures (ROPS) provided		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Braking system capable of stopping full payload		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Headlights and taillights operable when additional light required		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Brake lights in operable condition		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Cab glass provides no visible distortion to the operator		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. All machine guards are in place		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Hauling equipment (dump trucks) provided with cab shield or canopy		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Dump truck beds provided with positive means of support during maintenance or inspection		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Dump truck operating levers provided with latch to prevent accidental dumping		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Air monitoring conducted per HSP/FSI for hazardous atmospheres		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EQUIPMENT PLACEMENT (5.2.2)</b>					
28. Equipment position on firm/level surface, outriggers used		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Location of underground utilities identified		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Safe clearance distance maintained while working under overhead power lines		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Safe distance is maintained while traveling under power lines		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Warning system used to remind operator of excavation edge		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Unattended equipment visibly marked at night		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Tools lowered/parking brake set when not in use, wheels chocked when parked on incline		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EQUIPMENT OPERATION (5.2.3)</b>					
35. Equipment operated on safe roadways and grades		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. Equipment operated at safe speed		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Operators maintain unobstructed view of travel path		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. Equipment not operated during inclement weather, lightning storms		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Equipment started and moved safely		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Operators keep body parts inside cab during operation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Vehicle occupants in safe position while loading/unloading		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Signal person visible to operator when required		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Equipment used for hoisting done according to equipment manufacturer specifications		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. Lifting and hauling capacities are not exceeded		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EQUIPMENT MAINTENANCE (5.2.4)</b>					
45. Defective components repaired immediately		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. Suspended equipment or attachments supported prior to work under or between		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. Lockout/tagout procedures used prior to maintenance		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. Tires on split rims removed using safety tire rack or cage		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. Good housekeeping maintained on and around equipment		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SECTION 3**

Complete this section for all items checked "No" in Sections 1 or 2. Deficient items must be corrected in a timely manner.

<b>Item #</b>	<b>Corrective Action Planned/Taken</b>	<b>Date Corrected</b>

Auditor: \_\_\_\_\_ Project Manager: \_\_\_\_\_

# CH2MHILL

## HSE Self-Assessment Checklist—Groundwater Monitoring/Sampling

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This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's HSP/FSI.

This checklist is to be used at locations where: (1) CH2M HILL employees or subcontractors conduct groundwater sampling.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_

Location: \_\_\_\_\_ PM: \_\_\_\_\_

Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

Evaluate CH2M HILL employees conducting GW sampling

- Check “Yes” if an assessment item is complete/correct.
- Check “No” if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked “No.”
- Check “N/A” if an item is not applicable.
- Check “N/O” if an item is applicable but was not observed during the assessment.

### SECTION 1

#### GENERAL GW Monitoring

1. AHA/THA includes precautions for moving heavy coolers and they are followed.
2. Well Head Space is monitored in accordance with the HSP (PID)
3. Well enclosures are evaluated for biological hazards before opening (spiders, wasps)
4. Correct lifting procedures are used unloading equipment at each sampling location.
5. Well casing is evaluated for sharp edges and precautions are taken before opening
6. Place all purge water in containers and manage in accordance with site plans

Yes    No    N/AN/O

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### GENERAL - PPE

7. PPE available for use by employees.
8. PPE stored appropriately to prevent deformation or distortion.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### EYEWEAR (Glasses/Goggles/Face Shields)

9. Eyewear cleaning supplies available.
10. Safety glasses in good condition and lenses free of scratches.
11. Goggles adjustment strap not cracked or frayed, not deformed, or lenses not scratched.
12. Face shields in good condition, including adjustment band, and free of scratches or chips.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### HEAD PROTECTION

13. Hard hat bill and suspension attached as allowed by manufacturer.
14. Shell is pliable, free of dents, cracks, nicks, or any damage due to impact.
15. Suspension free of cuts or fraying, torn headband, adjustment strap workable.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### HAND PROTECTION

16. Available in sizes matched to employee.
17. Gloves free of rips tears, abrasions, or holes.
18. Matched to manufacturer's specification for chemicals used onsite.
19. Maintained in a clean and sanitary condition, decontaminated or disposed properly.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

# CH2MHILL

## HSE Self-Assessment Checklist—Groundwater Monitoring/Sampling

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### BODY PROTECTION

- |   |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 20. Available in sizes matched to employee.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. Maintained in a clean and sanitary condition, decontaminated or disposed properly.                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 22. Flame-resistant clothing matched to electrical hazard and arc flash rating and site requirements. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. Welding gear matched to degree of hazard and free of cuts, tears or burn holes.                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 24. Flotation gear available for work near or on water and in good condition.                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### HOT AND COLD BODY PROTECTION

- |   |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 25. Cooling gear available based on degree of heat stress hazard.                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 26. Cooling gear in operable, clean, and sanitary condition.                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 27. Cold-weather gear provided based on needs assessment.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 28. Cold-weather gear available in sizes to match employees.                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 29. Cold-weather gear is in free of tears, rips, or holes and in maintained in a clean condition. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### GENERAL - Tools

- |   |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 30. Fixed open blade knives are not used.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 31. All tools operated according to manufacturer's instructions and design limitations.               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 32. All hand and power tools maintained in a safe condition and inspected and tested before use.      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 33. Defective tools are tagged and removed from service until repaired.                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 34. PPE is selected and used according to tool-specific hazards anticipated.                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 35. Power tools are not carried or lowered by their cord or hose.                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 36. Tools are disconnected from energy sources when not in use, servicing, cleaning, etc.             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 37. Safety guards remain installed or are promptly replaced after repair.                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 38. Tools are stored properly.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 39. Cordless tools and recharging units both conform to electrical standards and specifications.      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 40. Tools used in explosive environments are rated for such use.                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 41. Consider controls to avoid muscular skeletal, repetitive motion, and cumulative trauma stressors. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### ELECTRIC-POWERED TOOLS (5.2.3)

- |   |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 42. Electric tools are approved double insulated or grounded and used according to instructions.      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 43. Electric cords are not used for hoisting or lowering tools.                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 44. Electric tools are used in damp/ wet locations are approved for such locations or GFCI installed. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 45. Hand-held tools are equipped with appropriate on/off controls appropriate for the tool.           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 46. Portable, power-driven circular saws are equipped with proper guards.                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### HAND TOOLS (5.2.9)

- |   |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 47. Wrenches/Spanners are not used when jaws are sprung to the point of slippage. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 48. Impact tools are kept free of mushroomed heads.                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project’s written safety plan.

This checklist is to be used when: 1) CH2M HILL staff are exposed to lockout/tagout hazards (complete Section 1), 2) CH2M HILL staff are self-performing lockout/tagout activities (completed Section 2), or 3) CH2M HILL provides oversight of subcontractor personnel who are performing lockout/tagout activities (complete Sections 1 and 2).

Safety Coordinator may consult with subcontractors when completing this checklist, but shall not direct the means and methods of lockout/tagout operations nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies and we must carefully rely on their expertise. Items considered to be imminently dangerous (possibility of serious injury or death) shall be corrected immediately, or all exposed personnel shall be removed from the hazard until corrected.

Project Name: \_\_\_\_\_ Project No.: \_\_\_\_\_  
 Location: \_\_\_\_\_ PM: \_\_\_\_\_  
 Auditor: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

This specific checklist has been completed to:

Evaluate CH2M HILL affected employee exposure to equipment during lockout/tagout  
 Evaluate CH2M HILL authorized employee exposure to equipment requiring lockout/tagout  
 Evaluate a CH2M HILL subcontractor’s compliance with lockout/tagout requirements

Subcontractors Name: \_\_\_\_\_

- Check “Yes” if an assessment item is complete/correct.
  - Check “No” if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor. Section 3 must be completed for all items checked “No.”
  - Check “N/A” if an item is not applicable.
  - Check “N/O” if an item is applicable but was not observed during the assessment.
- Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-33.

<b><u>SECTION 1</u></b>				
	<b><u>Yes</u></b>	<b><u>No</u></b>	<b><u>N/A</u></b>	<b><u>N/O</u></b>
<b>SAFE WORK PRACTICES (5.4)</b>				
1. Only trained and authorized personnel are performing lockout/tagout activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. All affected employees notified prior to lockout/tagout activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Equipment has been shutdown using normal operating controls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Employees do not attempt to start, energize or use equipment that is locked out or tagged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Employees do not remove locks or tags placed on equipment by other personnel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Affected employees are notified after lockout/tagout is completed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Employees verify that all safe guards have been replaced prior to equipment start-up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



<u>SECTION 2</u>	<u>Yes</u>	<u>No</u>	<u>N/A</u>	<u>N/O</u>
<b>GENERAL (5.5.1)</b>				
8. Only trained and authorized personnel are performing lockout/tagout activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Daily safety briefing/meeting conducted with affected and authorized employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Employees made aware of any equipment-specific lockout/tagout procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Authorized employees provided with lockout devices, locks, tags and other isolation devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. New or modified equipment designed to accept lockout devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EQUIPMENT-SPECIFIC LOCKOUT/TAGOUT PROCEDURES (5.5.2)</b>				
13. LOTO procedures available when required to be documented	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Equipment-specific LOTO procedures developed when not available from the facility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Affected employees notified that equipment will be shut down for LOTO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Energy sources, hazards, and control measures determined	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Orderly shutdown of equipment is conducted that does not increase hazards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Energy isolating devices operated to isolate energy sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Authorized employees apply personal lockout devices and tags to energy isolating device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Lockout devices are applied to secure equipment in the “off” position	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Lockout tags applied to clearly indicate that operating the equipment is prohibited	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Tags are located as close to or at the energy isolating device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. All hazardous stored or residual energy is relieved, disconnected or restrained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Isolation of energy sources has been verified (tested) prior to of work on equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Lockout tags are used alone only where lockout devices cannot be applied	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>LOCKOUT DEVICES AND TAGS (5.5.4)</b>				
26. Lockout devices and tags only used to isolate energy sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. Lockout devices and tags are standardized by color, shape, size, print, and format	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Lockout devices and tags indicate identity of employee applying the devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Lockout devices and tags capable of withstanding anticipated environmental conditions of use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Lockout devices are substantial enough to prevent removal without the use of excessive force	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Tags and their means of attachment are substantial enough to prevent inadvertent removal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. Tags are legible and understandable by all employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Tags warn against hazardous conditions if equipment is energized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>RELEASING LOTO CONTROL (5.5.5)</b>				
34. Work area inspected prior to removing LOTO devices and reenergization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. LOTO devices only removed by authorized employees who applied the device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. If employee not available to remove LOTO devices, steps in Section 4.2.4 of SOP followed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. All affected employees notified prior to starting equipment previously locked or tagged out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>GROUP LOTO (5.5.6)</b>				
38. Group LOTO procedures followed when more than one employee is to work on equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Primary authorized person assigned to coordinate LOTO process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40. Normal steps for initiating LOTO control completed as above	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. Primary authorized person applies own lockout device and tag	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. Each authorized person applies own lockout device and tag	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Primary authorized person removes LOTO devices after all other LOTO devices are removed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>SPECIAL CONDITIONS (5.5.7)</b>				
44. Shift or personnel changes coordinated to ensure LOTO protection is always provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. Procedures followed when LOTO devices are temporarily removed to test or reposition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



# CH2MHILL

## HSE Self-Assessment Checklist—Lifting

This checklist shall be used **only** by CH2M HILL personnel and shall be completed at the frequency specified in the project’s written safety plan.

This checklist is to be used at locations where: (1) CH2M HILL employees perform manual lifting activities (office or projects), and/or (2) CH2M HILL provides oversight of a subcontractor performing manual lifting activities. SC or Office Safety Coordinators/Committee members may consult with subcontractors (if applicable) when completing this checklist but shall not direct the means and methods of activities nor direct the details of corrective actions. Subcontractors shall determine how to correct deficiencies, and we must carefully rely on their expertise. Conditions considered imminently dangerous (possibility of serious injury or death) shall be corrected immediately or all exposed personnel shall be removed from the hazardous area until corrected.

Complete the appropriate project or office information:

<b>Project Information</b>				
Project Name: _____		Project No.: _____		
Location: _____		PM: _____		
Auditor: _____		Title: _____		Date: _____
<b>Office Information</b>				
Office Location: _____				
Auditor: _____ Title: _____ Date: _____				
This specific checklist has been completed to:				
<input type="checkbox"/> Evaluate CH2M HILL employee manual lifting activities.				
<input type="checkbox"/> Evaluate a CH2M HILL subcontractor’s manual lifting activities.				
Subcontractor Name: _____				
<ul style="list-style-type: none"> <li>• Check “Yes” if an assessment item is complete/correct.</li> <li>• Check “No” if an item is incomplete/deficient. Deficiencies shall be brought to the immediate attention of the subcontractor.</li> <li>• Check “N/A” if an item is not applicable.</li> <li>• Check “N/O” if an item is applicable but was not observed during the assessment.</li> </ul>				
Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-112.				
<b>Planning Activities</b>				
	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>N/O</b>
1. Efforts have been made to inquire about receiving equipment or supplies in containers weighting less than 50 pounds (23 kilograms).	o	o	o	o
2. Equipment or supplies are being delivered as close as possible to their use point.	o	o	o	o
3. Heavy equipment or supplies are being stored off the ground and no lower than knee height.	o	o	o	o
4. Adequate space has been provided to access and lift equipment or supplies without reaching or twisting.	o	o	o	o
<b>Safe Work Practices (5.1)</b>				
	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>N/O</b>
5. Tasks or activities have been modified to reduce or minimize manual lifting.	o	o	o	o
6. All employees performing manual lifting have received training on how to lift safely.	o	o	o	o

7.	Manual lifting control measures are evaluated during assessments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	Manual lifting incidents are reviewed as part of the HSE Program reviews.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9.	Manual lifting incidents are reviewed as part of the HSE Program reviews.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Office Environments (5.1.1)</b>		<b><u>Yes</u></b>	<b><u>No</u></b>	<b><u>N/A</u></b>	<b><u>N/O</u></b>
10.	Employees have received lifting training.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.	Mechanical devices are readily available to employees handling equipment or supplies weighing more than 40 pounds (18 kilograms).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Field Projects (5.1.2)</b>		<b><u>Yes</u></b>	<b><u>No</u></b>	<b><u>N/A</u></b>	<b><u>N/O</u></b>
12.	All manual lifting tasks or activities have been addressed in the written site safety plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.	Employees have received safe lifting training as required by the written site safety plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Mechanical Lifting (5.2)</b>		<b><u>Yes</u></b>	<b><u>No</u></b>	<b><u>N/A</u></b>	<b><u>N/O</u></b>
14.	Hand trucks and trolleys are visually inspected before use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.	Hand trucks and trolleys do not have any broken or damaged parts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.	Hand truck and trolley paths are free of uneven surfaces, water, oil, or cracks and holes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.	Loads carried by hand trucks are balanced and sturdy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.	Hand trucks or dollies are being pushed when on level ground.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.	When going up or down a slope using a hand truck or trolley, the load is downslope of the person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.	Employees using hand trucks or dollies are moving slowly and cautiously.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21.	Employees using hand trucks or trolleys are able to see over the load.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Assisted Lifting (5.3)</b>		<b><u>Yes</u></b>	<b><u>No</u></b>	<b><u>N/A</u></b>	<b><u>N/O</u></b>
22.	Personnel are not performing manual lifting beyond their physical capabilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23.	Loads are evenly distributed when being handled by multiple people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Manual Lifting (5.4)</b>		<b><u>Yes</u></b>	<b><u>No</u></b>	<b><u>N/A</u></b>	<b><u>N/O</u></b>
24.	Before the lift, the load and path was assessed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25.	Loads being lifted are free of sharp edges, slivers, or wet or greasy spots.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26.	Gloves are used for manual lifts of loads with sharp or splintered edges.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27.	Employees performing manual lifts use the proper lifting techniques.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28.	Special tools fabricated for lifting grates or manhole covers are used.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<b>Item #</b>	<b>Corrective Action Planned/Taken</b>	<b>Date Corrected</b>

Auditor: \_\_\_\_\_ Project Manager: \_\_\_\_\_

# CH2MHILL

## HS&E Self-Assessment Checklist: PERSONAL PROTECTIVE EQUIPMENT

Page 1 of 3

This checklist shall be used by CH2M HILL personnel **only** and shall be completed at the frequency specified in the project's written safety plan.

This checklist is to be used at locations where CH2M HILL employees are required to wear PPE or are required to perform oversight of a subcontractor using PPE or both.

CH2M HILL staff shall not direct the means and methods of subcontractor use of PPE nor direct the details of corrective actions. The subcontractor must determine how to correct deficiencies and CH2M HILL staff must carefully rely on their expertise. Conditions considered to be imminently dangerous (possibility of serious injury or death) must be corrected immediately or all exposed personnel must be removed from the hazard until corrected.

Project Name: _____	Project No.: _____
Location: _____	PM: _____
Auditor: _____	Title: _____
Date: _____	
This specific checklist has been completed to (check only one of the boxes below):	
<input type="checkbox"/> Evaluate CH2M HILL compliance with its PPE program (SOP HSE-117)	
<input type="checkbox"/> Evaluate a CH2M HILL subcontractor's compliance with its PPE program	
Subcontractor's Name: _____	
Check the appropriate box, as follows:	
<ul style="list-style-type: none"> <li>• Check "Yes" if an assessment item is complete or correct.</li> <li>• Check "No" if an item is incomplete or deficient. Section 2 must be completed for all items checked "No."</li> <li>• Check "N/A" if an item is not applicable.</li> <li>• Check "N/O" if an item is applicable but was not observed during the assessment.</li> </ul>	
Numbers in parentheses indicate where a description of this assessment item can be found in Standard of Practice HSE-121.	
<b>SECTION 1</b>	<b>Yes   No   N/A   N/O</b>
<b>GENERAL</b>	
1. Required PPE listed in HSP FSI or AHA.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2. PPE available for use by employees.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3. PPE cleaning supplies available for use.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4. PPE stored appropriately to prevent deformation or distortion.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5. PPE written certification has been completed.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>EYEWEAR (Glasses/Goggles/Face Shields)</b>	
6 Eyewear cleaning supplies available.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
7 Safety glasses in good condition and lenses free of scratches.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
8 Goggles adjustment strap not cracked or frayed, not deformed, or lenses not scratched.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
9. Face shields in good condition, including adjustment band, and free of scratches or chips.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

**CH2MHILL**

**HS&E Self-Assessment Checklist: PERSONAL PROTECTIVE EQUIPMENT**

<b>SECTION 1 (Continued)</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>N/O</b>
<b>HEAD PROTECTION</b>				
10. Hard hat bill and suspension attached as allowed by manufacturer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Shell is pliable, free of dents, cracks, nicks, or any damage due to impact.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Suspension maintained at 1.25 inches from inside of shell.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Suspension free of cuts or fraying, torn headband, adjustment strap workable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Electrical hard hat matched to hazard classification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Dated to determine whether within manufacturer's allowable 5-year use time period.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>HAND PROTECTION</b>				
16. Available in sizes matched to employee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Gloves free of rips tears, abrasions, or holes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Matched to manufacturer's specification for chemicals used onsite.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Electrical gloves matched to hazard and periodically inspected for insulating rating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Maintained in a clean and sanitary condition, decontaminated or disposed properly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>BODY PROTECTION</b>				
21. Available in sizes matched to employee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Maintained in a clean and sanitary condition, decontaminated or disposed properly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Vapor-tight fully encapsulated suits tested at required periodic intervals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Flame-resistant clothing matched to electrical hazard and arc flash rating.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Welding gear matched to degree of hazard and free of cuts, tears or burn holes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Flotation gear available for work near or on water and in good condition.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>HOT AND COLD BODY PROTECTION</b>				
27. Cooling gear available based on degree of heat stress hazard.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Cooling gear in operable, clean, and sanitary condition.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Cold-weather gear provided based on needs assessment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. Cold-weather gear available in sizes to match employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. Cold-weather gear is in free of tears, rips, or holes and in maintained in a clean condition.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>TRAINING</b>				
32. Initial PPE training completed by employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Training conducted when new types or styles of PPE are issued.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. PPE selection, use, and maintenance reviewed at daily safety briefings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





# **Jacobs Health and Safety Plan**

## **Attachment 5**

### **Behavior-Based Loss Prevention System Forms**

**Pre-Task Safety Plans**

**Safe Observation Reports**

**Heat Physiological Monitoring**



**Point of Work Risk Assessment and Daily Safety Meeting Sign-in Sheet (Refer to Instructions for use on last page.)**

Project:

Location:

Date:

Supervisor:

Job Activity (List tasks below and verify that applicable Hazard/Impact Identification Risk Assessments [HIRAs] have been reviewed):


Tools/Equipment required for task (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):


After reviewing the PHSEP and HIRRA, identify any specific or new task steps and/or hazards/impacts for the day's scope of work. Contact your Project HSM or EM to ensure identification of proper mitigation/control measures and resources prior to the start of work. Continue on another sheet of paper, if necessary. If PHSEP and HIRRA cover the task and there are no new or changes hazard/impacts, the table below doesn't need to be completed.

Steps of Activity/Task	New Hazard(s) or E Impact Identified	Mitigation/Controls

# Jacobs

**Instructions:** Review the HSE hazards/impacts in the table below to help identify new or changed hazards/impacts not identified in the HIRA. Use the space above to identify the controls to be used to mitigate the new or changed hazards/impacts.

<b>Potential HSE Hazards, including chemical, physical, safety, biological and environmental impacts (check all that are new or changed hazards and address controls above):</b>			
	H&S Hazards		Environmental Impacts
<input type="checkbox"/> Adverse weather conditions	<input type="checkbox"/> Noise	<input type="checkbox"/> Spill/Release	<input type="checkbox"/> Working in or Near Water <sup>(a)</sup>
<input type="checkbox"/> Chemical use	<input type="checkbox"/> Overexertion	<input type="checkbox"/> Erosion of Disturbed Areas	<input type="checkbox"/> Uncontrolled Hazardous Air Emissions <sup>(b)</sup>
<input type="checkbox"/> Confined space entry	<input type="checkbox"/> Overhead hazards	<input type="checkbox"/> Discharges to Water <sup>(a)</sup>	<input type="checkbox"/> Working in or near Protected Species Habitat
<input type="checkbox"/> Cuts/abrasions, pinch points	<input type="checkbox"/> Pinch points	<input type="checkbox"/> Working in or Near Contaminated Land <sup>(c)</sup>	<input type="checkbox"/> Damage to Vegetation and/or Trees
<input type="checkbox"/> Electrical	<input type="checkbox"/> Pressurized lines or equipment	<input type="checkbox"/> Active Bird Nests in or Near Area of Work Activity	<input type="checkbox"/> Damage to Cultural, Historical, or Archaeological Resources
<input type="checkbox"/> Elevated loads	<input type="checkbox"/> Repetitive motions or lifting	<input type="checkbox"/> Noise and/or Vibration	<input type="checkbox"/> Dust and/or particulate pollution
<input type="checkbox"/> Excavations, trench entry	<input type="checkbox"/> Security	<input type="checkbox"/> Sediment Leaving the Site	<input type="checkbox"/> Damage to Fish, Wildlife or Ecosystems
<input type="checkbox"/> Fire or explosion hazard	<input type="checkbox"/> Slips, trip and falls	<input type="checkbox"/> Inappropriate Disposal of Waste	<input type="checkbox"/> Inappropriate regulated waste management (e.g., hazardous materials, radioactive materials, etc.)
<input type="checkbox"/> Eye hazards (poke, splash, debris)	<input type="checkbox"/> Biological hazards (Insects/snakes/poisonous plants)	<input type="checkbox"/> Inappropriate storage/ use/ management of hazardous materials (e.g., hazardous materials)	<input type="checkbox"/> Other (specify)
<input type="checkbox"/> Heat/cold stress	<input type="checkbox"/> Water/drowning hazard	<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Other (specify)
<input type="checkbox"/> Hot work	<input type="checkbox"/> Underground Utilities	<input type="checkbox"/> Other (specify)	
<input type="checkbox"/> Heights/fall > 6 feet	<input type="checkbox"/> Management of contractors		
<input type="checkbox"/> Inhalation hazard	<input type="checkbox"/> Manual Lifting		
<input type="checkbox"/> Lifting operations	<input type="checkbox"/> Energy Isolation (LO/TO)		
<input type="checkbox"/> Driving			
<b>Field Notes (including observations from prior day, etc.) and/or HSE topics discussed:</b>			
<b>Required HS Permits (check any that apply and verify tasks are addressed in HSE Plan and/or Hazard/Impact Identification Risk Assessment [HIRA]):</b>			
Required HS Permits			
<input type="checkbox"/> Hot work	<input type="checkbox"/> Confined space	<input type="checkbox"/> Lockout/tagout	<input type="checkbox"/> Energized Electrical
	<input type="checkbox"/> Excavation	<input type="checkbox"/> Demolition	<input type="checkbox"/> Permit to Work
	<input type="checkbox"/> Other (specify):		
<b>The signature of the supervisor confirms the completion of the POWRA by the team.</b>			
<b>Supervisor Signature:</b>			<b>Date</b>

- Notes:
- (a) Includes coastal zones, river corridors, streams, wetlands, drainage ditches, storm drain inlets, etc.
  - (b) Includes emissions associated with off-road diesel engines, emergency generators, asphalt paving equipment, concrete batch plant, concrete drilling/crushing, demolition activities, and hazardous waste storage.
  - (c) As a result of historical spills/releases, underground pipelines or tanks, septic systems or leach fields, infiltration of contamination groundwater and/or contamination from surrounding property, working in an industrialized area or areas with utilities.



# Beyond Zero Observation Form

Environment  
  Health & Safety  
  Mental Health  
  Federal Solutions  
  Environmental Solutions  
 Security & Resilience  
 (check one)

Project Number:	Client/Program:		
Project Name:	Observer:	Date:	Time:
Location of Observation:	<input type="checkbox"/> Home <input type="checkbox"/> Office <input type="checkbox"/> Project <input type="checkbox"/> In Transit		

Task/Observation Observed:

- ❖ Identify and reinforce safe work practices/behaviors
- ❖ Identify and improve on at-risk practices/acts
- ❖ Identify and improve on practices, conditions, controls, and compliance that eliminate or reduce hazards
- ❖ Proactive PM support facilitates eliminating/reducing hazards (do you have what you need?)
- ❖ Positive, corrective, cooperative, collaborative feedback/recommendations

Observation Category	Safe	At-Risk	Observations/Comments
Chemicals			Describe Observations or Conditions
Electrical Hazards			
Energy Isolations			
Ergonomics			
Falls / Openings			
Fire Prevention / Protection			
Hazardous Materials			
Health / Fitness for Duty			
Housekeeping			
Ladders / Platforms			
Lifting Operations			Worst Potential Severity <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5
Manual Handling			Did you interact with the worker(s) in relation to this observation?
Other			Immediate Action Taken?
PPE			
Restricted Areas			
Safeguards			
Slips / Trips			
Tools / Equipment			Are Further Actions Required? Does this observation require follow up from someone else?
Unsecured Objects			
Vehicles / Mobile Equipment			
Work Conditions/Surroundings			
Work Practices			
Environment			
Mental Health			
Security & Resilience			

Please input online at JacobsConnect. Send to Project Manager, Supervisor and Health and Safety Manager.

## Worst Potential Severity Table

<b>WPS</b>	<b>Injury -Illness</b>	<b>Environment</b>	<b>Property Damage</b>
5	Fatality or total permanent disability	Serious offsite impact, significant remediation required	USD\$> 3 million
4	Partial disability; life changing; intensive care	Significant offsite impact, some remediation required	USD\$ 300K-3 million
3	Urgent treatment, surgery	Release significantly above reportable limit of some local impact	USD\$ 30K-300K
2	Medical treatment to prevent deterioration	Release above reportable limit or minor impact	USD\$ 3K-30k
1	Simple, immediate treatment	Small release contained onsite and no impact	USD\$ less than 3K



# HEAT STRESS PHYSIOLOGICAL MONITORING FORM

Project:

Date:

Company:

1. Take and record measurement of temperature or pulse at the frequency indicated in the safety plan.
2. Follow the Physiological Monitoring Protocol in the safety plan.
3. Never continue work if your body temperature is more than 100.4° F/38° C, or if you are experiencing sudden and severe fatigue, nausea, dizziness, or lightheadedness.

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Heat Index								
Pulse								

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Heat Index								
Pulse								

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Heat Index								
Pulse								

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Heat Index								
Pulse								

## Physiological Monitoring and Associated Actions

For employees wearing permeable clothing (e.g. street clothes, breathable coveralls), follow the minimum frequency of physiological monitoring listed in Table 1 below, beginning when the Heat Index reaches 80°F.

For employees wearing impermeable clothing (e.g. Tyvek), physiological monitoring should begin when the ambient temperature reaches 70°F, and then according to the minimum frequency listed in the Table 1, or sooner if deemed necessary.

The following physiological monitoring protocol, using either radial pulse or aural temperature, and the accompanying regimen must be enacted. Exposure to heat stress conditions must be discontinued if the worker does not respond to physiological monitoring actions.

### Pulse Rate:

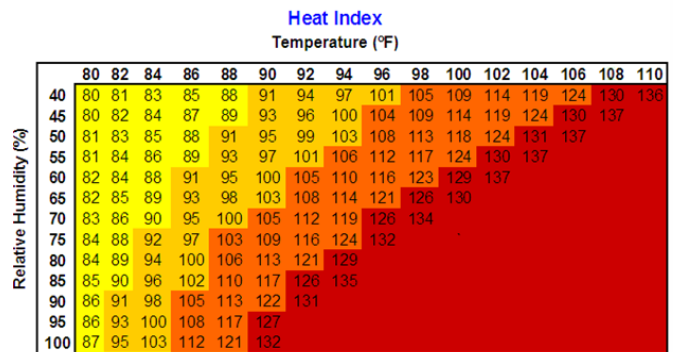
- The heart rate should be measured by the radial pulse for 30 seconds, as early as possible in the resting period.
- The heart rate after one minute rest period should not exceed 120 bpm.
- If the heart rate is higher, the next work period should be shortened by 33 percent, while the length of the rest period stays the same.
- If the pulse rate still exceeds 120 bpm at the beginning of the next rest period, the following work cycle should be further shortened by 33 percent.
- Continue this procedure until the rate is maintained below 120 bpm, or 20 bpm above resting pulse.

**Body Temperature** - either oral or aural (ear), before the workers have something to drink:

- If the oral or aural temperature exceeds 99.6°F (37.6 °C) at the beginning of the rest period, the following work cycle should be shortened by 33 percent.
- Continue this procedure until the oral or aural (ear) temperature is maintained below 99.6 °F (37.6°C). While an accurate indication of heat stress, oral temperature is difficult to measure in the field, however, a digital aural (aural) thermometer is easy to obtain and inexpensive to purchase.

Heat Index	Possible Heat Disorders	Minimum Frequency of Physiological Monitoring
80°F - 90°F (27°C - 32°C)	Fatigue possible with prolonged exposure and/or physical activity	Conduct initial monitoring as baseline and observe workers for signs of heat stress and implement physiological monitoring if warranted.
90°F - 105°F (32°C - 41°C)	Sunstroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity	Conduct initial monitoring as baseline, then at least every hour, or sooner, if signs of heat stress are observed.
105°F - 130°F (41°C - 54°C)	Sunstroke, heat cramps, or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity.	Conduct initial monitoring as baseline, then every 30 minutes or sooner if signs of heat stress are observed.
130°F or Higher (54°C or Higher)	Heat/Sunstroke highly likely with continued exposure.	Conduct initial monitoring as baseline, then every 15 minutes or sooner if signs of heat stress are observed.

Source: National Weather Service



**Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity**

Caution
  Extreme Caution
  Danger
  Extreme Danger

# **Jacobs Health and Safety Plan**

## **Attachment 6**

### **Safety Data Sheets (For Chemical Inventory)**



# Jacobs Health and Safety Plan

## Attachment 7

### Working Alone Standard

## CALL – IN CONTACT FORM

Date of site work: \_\_\_\_\_ Expected start time: \_\_\_\_\_

Name of Jacobs employee in the field: \_\_\_\_\_

Name of Jacobs employee responsible to receive contact: \_\_\_\_\_

Client Emergency Contact (if any): \_\_\_\_\_

Jacobs employee's contact numbers:

Radio # \_\_\_\_\_

Cell Phone # \_\_\_\_\_

Address and Location of work: \_\_\_\_\_

Directions/Map:

Planned Activity: \_\_\_\_\_

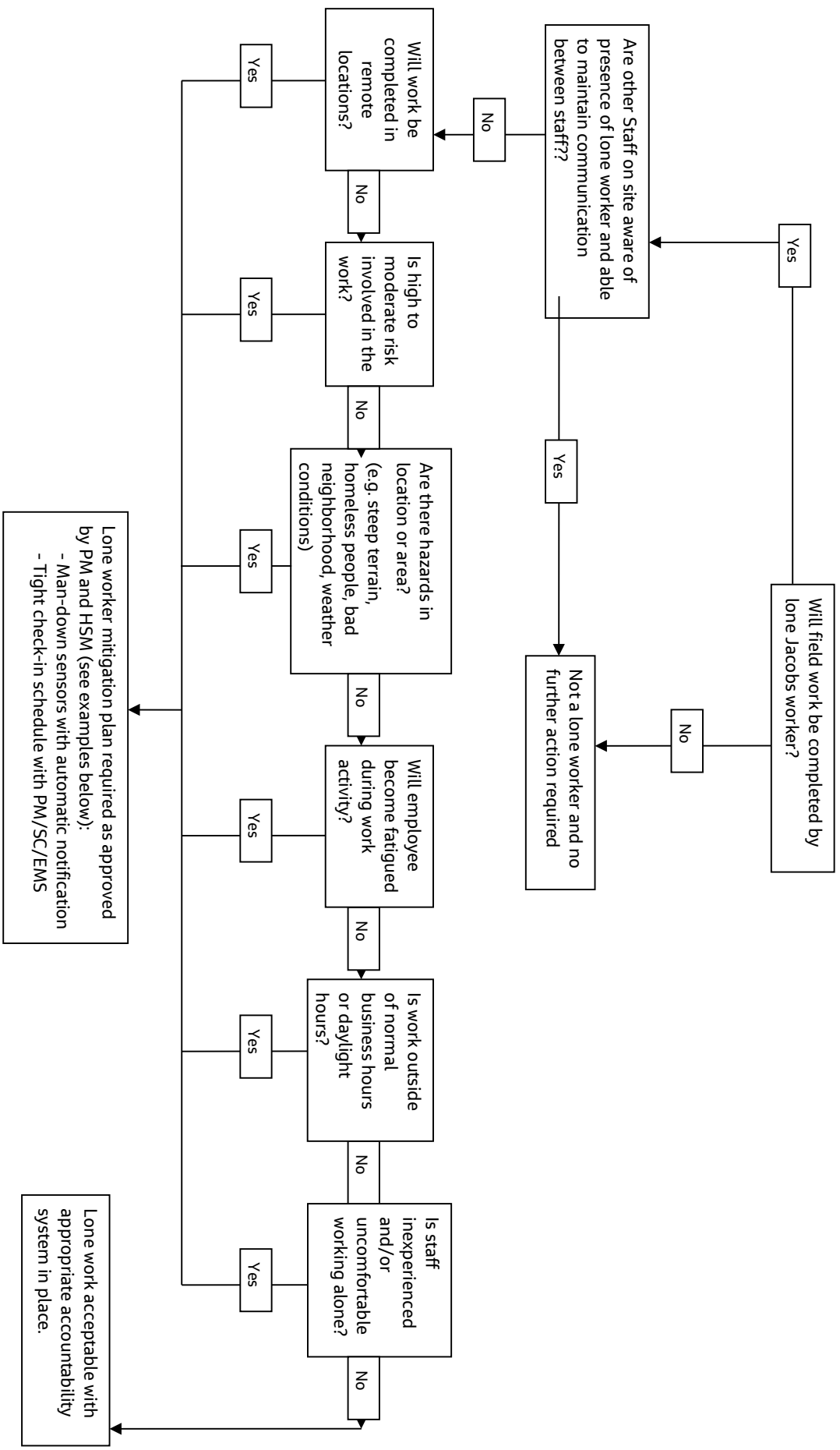
Specified Frequency and time for call in: \_\_\_\_\_

Time	Verified	Location

If lone worker fails to call in at specified frequency/time:

- 1) Call worker's radio and cell to determine if an emergency exists.
- 2) If no reply, immediately call Client security/emergency service if there is one at the site.
- 3) If there is no client security call Emergency Services (911). Inform the dispatcher there is a lone worker that cannot be contacted and there may be an emergency on site. Provide the lone worker's name, their last known location, and your contact information.
- 4) After Emergency Services have been contacted, call the other emergency contacts, Project Manager, and Responsible Health and Safety Manager.

# Lone Worker Protocol



# Jacobs Health and Safety Plan

## Attachment 8

### Tick Fact Sheet

# Tick-Borne Pathogens — A Fact Sheet

Most of us have heard of Lyme disease or Rocky Mountain Spotted Fever (RMSF), but there are actually six notifiable tick-borne pathogens that present a significant field hazard. In some areas, these account for more than half of our serious field incidents. The following procedures should be applied during any field activity—even in places that are predominantly paved with bordering vegetation.

## Hazard Recognition

An important step in controlling tick related hazards is understanding how to identify ticks, their habitats, their geographical locations, and signs and symptoms of tick-borne illnesses.

## Tick Identification

There are five varieties of hard-bodied ticks that have been associated with tick-borne pathogens. These include:

- Deer (Black Legged) Tick (eastern and pacific varieties)
- Lone Star Tick
- Dog Tick
- Rocky Mountain Wood Tick

These varieties and their geographical locations are illustrated on the following page.

## Tick Habitat

In eastern states, ticks are associated with deciduous forest and habitat containing leaf litter. Leaf litter provides a moist cover from wind, snow, and other elements. In the north-central states, is generally found in heavily wooded areas often surrounded by broad tracts of land cleared for agriculture.

On the Pacific Coast, the bacteria are transmitted to humans by the western black-legged (deer) tick and habitats are more diverse. For this region, ticks have been found in habitats with forest, north coastal scrub, high brush, and open grasslands. Coastal tick populations thrive in areas of high rainfall, but ticks are also found at inland locations.

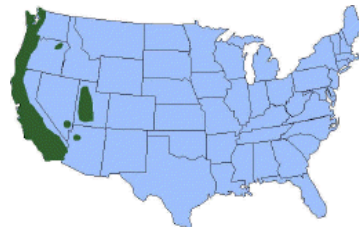
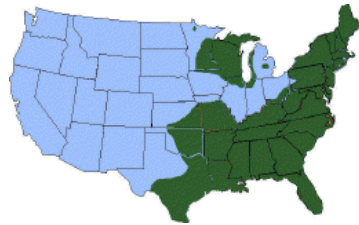
## Illnesses and Signs & Symptoms

There are six notifiable tick-borne pathogens that cause human illness in the United States. These pathogens may be transmitted during a tick bite—normally hours after attachment. The illnesses, presented in approximate order of most common to least, include:

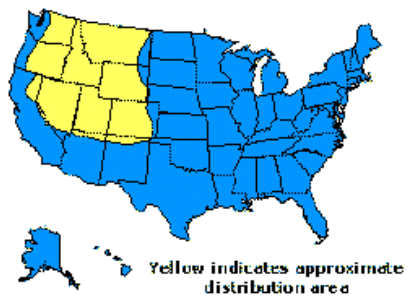
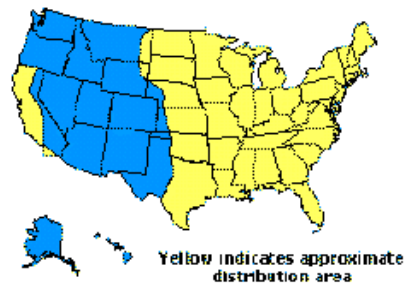
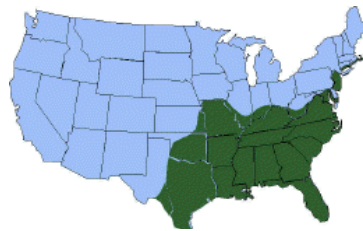
- Lyme (bacteria)
- RMSF (bacteria)
- Ehrlichiosis (bacteria)
- STARI (Southern Tick-Associated Rash Illness) (bacteria)
- Tularemia (Rabbit Fever) (bacteria)
- Babesia (protozoan parasite)

Symptoms will vary based on the illness, and may develop in infected individuals typically between 3 and 30 days after transmission. Some infected individuals will not become ill or may develop only mild symptoms. These illnesses present with some or all of the following signs & symptoms: fever, headache, muscle aches, stiff neck, joint aches, nausea, vomiting, abdominal pain, diarrhea, malaise, weakness, small solid, ring-like, or spotted rashes. The bite site may be red, swollen, or develop ulceration or lesions. For

Lyme disease, the bite area will sometimes resemble a target pattern. A variety of long-term symptoms may result if the illness is left untreated, including debilitating effects and death.



From Left: adult female, adult male,



## Hazard Control

The methods for controlling exposure to ticks include, in order of most- to least-preferred:

- Avoiding tick habitats and ceasing operations in heavily infested areas
- Reducing tick abundance through habitat disruption or application of acaricide
- Personal protection through use of repellants and protective clothing
- Frequent tick inspections and proper hygiene

Vaccinations are not available and preventative antibiotic treatment after a bite is generally not recommended.

## Avoidance and Reduction of Ticks

To the extent practical, tick habitats should be avoided. In areas with significant tick infestation, consider stopping work and withdrawing from area until adequate tick population control can be achieved.

Stopping and withdrawing should be considered as seriously as entering an area without proper energy control or with elevated airborne contaminants—tick-borne pathogens present risk of serious illness!

In areas where significant population density or infestation exists, tick reduction should be considered. Tick reduction can be achieved by disrupting tick habitats and/or direct population reduction through the use of tick-toxic pesticides (Damminix, Dursban, Sevin, etc.).

Habitat disruption may include only simple vegetative maintenance such as removing leaf litter and trimming grass and brush. Tick populations can be reduced by between 72 and 100 percent when leaf litter alone is removed. In more heavily infested areas, habitat disruption may include grubbing, tree trimming or removal, and pesticide application (Damminix, Dursban, Sevin, etc.). This approach is practical in smaller, localized areas or perimeter areas that require occasional access. Habitat controls are to be implemented with appropriate health and safety controls, in compliance with applicable environmental requirements, and may be best left to the property owner or tenant or to a licensed pesticide vendor. Caution should be exercised when using chemical repellents or pesticides in or around areas where environmental or industrial media samples will be collected for analysis.

## Personal Protection

After other prevention and controls are implemented, personal protection is still necessary to control exposure to ticks. Personal protection must include all of the following steps:

- So that ticks may be easily seen, wear light-colored clothing. Full-body New Tyvek (paper-like disposable coveralls) may also be used
- To prevent ticks from getting underneath clothing tuck pant legs into socks or tape to boots
- Wear long-sleeved shirts, a hat, and high boots
- Apply DEET repellent to exposed skin or clothing per product label
- Apply permethrin repellent to the outside of boots and clothing before wearing, per product label
- Frequently check for ticks and remove from clothing
- At the end of the day, search your entire body for ticks (particularly groin, armpits, neck, and head) and shower
- To prevent pathogen transmission through mucous membranes or broken/cut skin, wash or disinfect hands and/or wear surgical-style nitrile gloves any time ticks are handled

Pregnant individuals and individuals using prescription medications should consult with their physician and/or pharmacists before using chemical repellents. Because human health effects may not be fully known, use of chemical repellents should be kept to a minimum frequency and quantity. Always follow manufacturers' use instructions and precautions. Wash hands after handling, applying, or removing protective gear and clothing. Avoid situations such as hand-to-face contact, eating, drinking, and smoking when applying or using repellents.

Remove and wash clothes per repellent product label. Chemical repellents should not be used on infants and children.

Vaccinations are generally not available for tick-borne pathogens. Although production of the LYMERix™ Lyme disease vaccination has been ceased, vaccination may still be considered under specific circumstances and with concurrence from the consulting physician.

### Tick Check

A tick check should be performed after field survey before entering the field vehicle (you do not want to infest your field vehicle with ticks). Have your field partner check your back; the backs of your legs, arms, and neck; and your hairline. Shake off clothing as thorough as possible before entering the vehicle. Once the field day is complete, repeat this procedure and perform a thorough self-check.

If a tick has embedded itself into the skin, remove the tick as described below.

### Tick Removal

(c) Use the tick removal kit obtained through the Jacobs Milwaukee warehouse, or a fine-tipped tweezers or shield your fingers with a tissue, paper towel, or nitrile gloves.



2. Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. If this happens,



remove mouthparts with tweezers. Consult your healthcare provider if infection occurs.

3. Avoid squeezing, crushing or puncturing the body of the tick because its fluids (saliva, hemolymph, gut contents) may contain infectious organisms. Releasing these organisms to the outside of the tick's body or into the bite area may increase the chance of infectious organism transmission.

4. Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin. This precaution is particularly directed to individuals who remove ticks from domestic animals with unprotected fingers. Children, elderly persons, and immunocompromised persons may be at greater risk of infection and should avoid this procedure.

5. After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.



6. Should you wish to save the tick for identification, place it in a plastic bag, with the date of the tick bite, and place in your freezer. It may be used at a later date to assist a physician with making an accurate diagnosis (if you become ill).

**Note:** Folklore remedies such as petroleum jelly or hot matches do little to encourage a tick to detach from skin. In fact, they may make matters worse by irritating the tick and stimulating it to release additional saliva, increasing the chances of transmitting the pathogen. These methods of tick removal should be avoided. In addition, a number of tick removal devices have been marketed, but none are better than a plain set of fine tipped tweezers.

#### **First-Aid and Medical Treatment**

Tick bites should always be treated with first-aid. Clean and wash hands and disinfect the bite site after removing embedded tick. Individuals previously infected with Lyme disease does not confer immunity—re-infection from future tick bites can occur even after a person has contracted a tick-borne disease.

The employee should contact the Injury Management/Return To Work provider (IMRTW), WorkCare (see emergency contacts) to report the tick bite. WorkCare will follow-up with each Jacobs employee who reports a tick bite and is at risk of developing Lyme disease by monitoring for symptoms up to 45 days, and will refer the employee to a medical provider for evaluation and treatment as necessary.

# Jacobs Health and Safety Plan

## Attachment 9

### Observed Hazard Form

# Jacobs

## OBSERVED HAZARD FORM

Name/Company of Observer (*optional*):

Date reported: \_\_\_\_\_

Time reported: \_\_\_\_\_

Contractor/s performing unsafe act or creating unsafe condition:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Unsafe Act or Condition:

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Location of Unsafe Act or Condition:

---

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Name of Jacobs Representative:

---

Corrective Actions Taken:                      Date: \_\_\_\_\_

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Project Safety Committee Evaluation:                      Date: \_\_\_\_\_

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# Jacobs Health and Safety Plan

## Attachment 10

### Stop Work Order Form



# Stop Work Order

**REPORT PREPARED BY:**

Name:	Title:	Signature:	Date:

---

**ISSUE OF NONPERFORMANCE:**

Description:	Date of Nonperformance:

**SUBCONTRACTOR SIGNATURE OF NOTIFICATION:**

Name:	Title:	Signature:	Date:

---

*\* Corrective action is to be taken immediately. Note below the action taken, sign and return to CCI.\* Work may not resume until authorization is granted by Jacobs Constructors, Inc. Representative,*

**SUBCONTRACTOR'S CORRECTIVE ACTION**

Description:	Date of Nonperformance:

**SUBCONTRACTOR SIGNATURE OF CORRECTION**

Name:	Title:	Signature:	Date:

# **Jacobs Health and Safety Plan**

## **Attachment 11**

### **Radiation Protection Plan**



**Attachment 11: Radiation Protection Plan, Area I Burn Pit**

**Boeing Santa Susana Field Laboratory (SSFL) Project,  
Ventura County, California**

Prepared for:  
The Boeing Company  
Canoga Park, California

October 2022

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## Table

1	Radiation Monitoring and Equipment Description
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## Acronyms and Abbreviations

100cm <sup>2</sup>	100 square centimeters
mR/hr	milli roentgen per hour
µrem/h	micro roentgen equivalent man per hour
AIBP	Area I Burn Pit
AL	action level
ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
CFR	United States Code of Federal Regulations
CHP	Certified Health Physicist
cpm	counts per minute
DOT	United States Department of Transportation
GPS	Global Positioning System
HIIRA	Hazard/Impact Identification and Risk Assessment
HSM	Health and Safety Manager
HSP	Health and Safety Plan
IDW	investigation-derived waste
LLRW	Low-Level Radioactive Waste
LUTV	Look-Up Table Value
Nal	Sodium Iodide
PM	project manager
PPE	Personal Protection Equipment
Ra	Radium
RCA	Radiologically Controlled Area
ROPC	Radionuclides of Potential Concern
RPP	Radiation Protection Plan
RRPT	National Registry of Radiation Protection Technologist
RSG	Radiation Services Group
RSO	Radiation Safety Officer
RWP	Radiation Work Permit
SME	Subject Matter Expert
Th	Thorium
U	Uranium
UN	United Nations

# 1. Radiation Protection Background

## 1.1 Project Description and Scope

The scope of work covered by this Radiation Protection Plan (RPP) is radiological monitoring, surveys, and sampling in support of project activities at the Boeing Santa Susana Field Laboratory (SSFL) Project, Ventura County, California.

Boeing intends to conduct a risk-based cleanup of chemical contamination and a background cleanup for radionuclides at the Area I Burn Pit. This entails removal of soil with Ra-226 contamination and a minimal amount of soil with U-238 and Th-232 concentrations that are just above background levels. The radionuclide impacted soil is intermixed with soil that is also chemically contaminated which is also destined for removal. Therefore, removal of radiologically impacted soil is incidental to, and coincidental with, removal of larger quantities of chemically impacted soil. The levels of radionuclides in the Burn Pit would not require remediation or decommissioning in order to meet the dose limits of 10 CFR 20.1402, as demonstrated by Boeing's dose assessment.

For the purposes of ensuring internal and external doses are As Low As Reasonably Achievable (ALARA) Radiation Safety Personnel will perform radiation safety monitoring of soils, equipment, and personnel during soil removal under the Boeing Radiation Safety Program. Radiation Safety Personnel will also assist in characterization of soil for radiological purposes.

## 1.2 Potential Radiation Hazards

Ionizing radiation consists of energy in the form of particles or electromagnetic rays emitted from a source. It is referred to as ionizing because this type of radiation has the ability, when it contacts matter, to cause ionization (the displacement of electrons from within atoms of the contacted matter). This material contains unstable atoms that, because of their instability, emit radiation. Unstable means the atom's nucleus has more energy than it can hold (because it contains excess neutrons) and emits radiation from the nucleus until the excess energy is gone. Materials containing unstable atoms that emit radiation are referred to as radioactive, and the process that results in the emission of nuclear radiation is referred to as radioactive decay (sometimes radioactive disintegration). The four primary types of ionizing radiation that we are generally concerned with are alpha and beta particles, and X-ray and gamma-ray radiation.

### 1.1.1 Radionuclides of Potential Concern

Sources of potential ionizing radiation on the project are commonly identified as Radionuclides of Potential Concern (ROPC)s. The ROPCs for the project are primarily Ra-226, Th-232, U-238, U-235, and the associated decay progenies from past site operations.

### 1.1.2 Alpha Particles

Alpha particles are released from the nucleus of radioactive atoms during the process of radioactive decay. Materials that emit alpha particles are called alpha emitters, though they may emit other types of radiation as well. Alpha particles generally have a high level of energy and consist of two protons and two neutrons with a positive charge of 2. Because they are relatively heavy (in nuclear terms), alpha particles can travel only a few inches through air and can be stopped by clothing, the outside layer of skin, a sheet of paper, or other paper-thin material. As a result, alpha emitters are not a health hazard so long as they are not inhaled, ingested, or otherwise taken into the body. If alpha-emitting radioactive materials are taken into the body, they will deliver all their energy directly to a small volume of the tissue where they deposit. For example, some alpha emitters are "bone seekers" because of their chemical characteristics and may become part of the bone structure where they will

deposit all their energy. Others may concentrate in body organs such as the kidneys, liver, lungs, and spleen. The primary objective in dealing with alpha emitters is contamination control, and the prevention of inhalation and ingestion because they are considered internal hazards.

### 1.1.3 Beta Particles

Beta particles are tiny charged particles like electrons emitted from the nucleus of radioactive atoms and have an electric charge of negative 1. Beta particles can travel up to several feet through air, but can still be stopped by clothing, several layers of skin, a sheet of plastic, or thin metal. Although they can penetrate the surface layers of human skin, beta particles do not have the energy required to penetrate and expose the internal organs. Surface skin burns, similar to sunburn, can result from high exposure to beta radiation. If beta emitters are taken into the body, they will deliver their energy throughout the tissues and organs where they deposit. The primary objectives in dealing with beta emitters are contamination control, avoiding exposure to uncovered skin areas and the eyes, and prevention of inhalation and ingestion. An additional issue associated with beta emitters in relatively large quantities is the secondary X-ray radiation that can be generated when the beta particles interact with high-atomic-mass materials (for example, lead and steel). As a result, plastics and aluminum are preferred shielding for beta emitters.

### 1.2.1 Gamma Rays

Gamma rays are electromagnetic radiation like sunlight (although with a much higher frequency and energy). Unlike alpha and beta radiation, gamma rays are not particles and have no mass, but are emitted from the nucleus of many radioactive materials during radioactive decay. Because gamma rays have no mass, but can have relatively high energy, they travel long distances, are very penetrating, and difficult to stop. Gamma rays from a source external to the body are able to expose the whole body, including internal organs. The primary objective in dealing with gamma emitters is shielding to prevent external exposure. In the event of inhalation or ingestion of gamma emitters, the whole body will be exposed.

### 1.2.2 X-Rays

X-rays are electromagnetic radiation (similar to gamma rays) produced when high-speed electrons are slowed down rapidly upon striking a high-atomic-mass substance. They are produced in X-ray generating machines by directing a beam of electrons at a target material, and, as mentioned above, they can also be generated when beta particles (negatively charged particles like electrons) interact with high-atomic-mass materials. X-rays can be produced with a wide range of energies based on the energy of the electron beam and nature of the target material. As with gamma rays, the primary objective in dealing with X-rays is shielding to prevent external exposure. However, X-rays are not nuclear radiation (that is, emitted from the nucleus of a radioactive material), and as such there are no concerns with inhalation or ingestion.

## 2. General Radiation Control Measures

### 2.1 General Controls

- Areas with the potential to have radioactive materials above the LUTVs will be posted and controlled as Radiologically Controlled Areas (RCA), with additional requirements detailed in the Radiation Work Permits (RWP).
- Limit the amount of potential radioactive waste (for example, packaging, soil, decontamination water, etc.).
- Do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in work areas with potential radioactive material.

- Promptly report any condition that may lead to or cause a violation of radiation protection standards.
- Radiation monitoring will be conducted prior to any surface removal or intrusive work at the site unless approved by the Boeing RSO and the Jacobs RSO or designee.
- Stay a safe distance away from any intrusive activities that personnel may be performing (for example, shoveling or other similar activities). If wind causes potentially impacted soils to become airborne, suspend work and move upwind until no dust is being produced, or suspend work altogether. Areas will be administratively posted for the radiological risk, to include visible barriers, in a safe manner that allows for usable access to the area while preventing unauthorized or inadvertent access.
- Wear appropriate personal protective equipment, as detailed in the HSP, RPP, and/RWPs as appropriate.
- Assure that radioactive sources, containers, and the area are properly labeled and posted.
- Coordination and approval with and by the Boeing RSO for temporary storage of exempt quantities of radioactive materials, in the form of instrument performance test sources (check sources), is required prior to transportation and delivery to the Boeing property.
- Plan activities to minimize exposure ALARA, to include waste minimization.
- Decontamination of any radiological contamination SHALL only be performed by trained Radiation Safety staff, as authorized by the Boeing and Jacobs RSO or designee.

Always follow the ALARA principle, which is the approach to radiation protection to manage and control exposures (both individual and collective) to the work force and to the public to as low as is reasonable, considering social, technical, economic, practical, and public policy considerations. When the ALARA principle is applied, it is not a dose limit but a process that has the objective of attaining doses as far below the applicable limits as is reasonably achievable. The applicable ALARA safety controls to be implemented are as follows:

- 1) Time: Do not loiter in areas with suspected material, to reduce the duration of potential exposure.
- 2) Distance: Do not approach a suspect item any closer than needed to perform the intrusive work, to reduce the amount of potential radiation exposure.
- 3) Shielding: Use Personal Protective Equipment (PPE), as outlined in the Site Safety and Health Plan, to protect from dermal exposure.

## **2.2 Task Specific Controls**

### **2.2.1 Soil Removal**

- 1) If deemed appropriate by field conditions and health and safety concerns of the excavation, scan survey the soil surfaces prior to excavation of each 6-12 inch lift a GPS enabled Ludlum 2221/44-10.
- 2) Record the Minimum, Maximum, and approximate average scan cpm on the monitoring form.
- 3) The Action Level (AL) is ten times (10X) the approximate average scan cpm documented for the instrument. Notify the PM, Boeing RSO, and Jacobs RSO if the AL is exceeded and mark the location.
  - a) Excavation can occur in all areas less than the AL.
  - b) Areas greater than the AL are to be excavated after written approval by the PM, Boeing RSO, and Jacobs RSO, or designee.
- 4) If deemed appropriate by field conditions and health and safety concerns of the excavation, scan survey the soil surfaces following excavation to the final depth using a GPS enabled Ludlum 2221/44-10.

### 2.2.2 Personnel Surveys (Frisking)

- 1) Personnel leaving the excavation area will self-frisk their hands and feet in the following manner:
  - a) Remove PPE.
  - b) Determine the localized background of the Ludlum 12/44-9 (or equivalent) by observing the count rate for 10-30 sec and determining the average over that time (this is an estimation).
  - c) Scan the hand and feet at a rate of approximately 1"-2"/sec at a distance of ¼" away from the scan surface.
    - i) If the Ludlum 12/44-9 readings are below estimated two times above the localized background, personnel may exit the area.
    - ii) If the Ludlum 12/44-9 readings are greater than two times the localized background, the individual is to immediately notify the Radiation Safety Staff for additional directions.

### 2.2.3 Soil Characterization Sampling

Soil sampling will be completed as follows:

- 1) appropriately trained sampling personnel (commensurate with the risk) will collect soil samples from each bag as determined in the Remedial Action Work.
- 2) Samples to be packaged and shipped per section 1.3.2.4.

### 2.2.4 Sample Shipping

Samples designated for shipment to a radioanalytical shipping laboratory shall be packaged by a person properly trained in Dangerous Goods Shipping and DOT Class 7 Limited Quantity Training using the following specifications provided in 49CFR173.421:

- 1) Outer package meets specifications of a strong-tight container.
- 2) Inventory of sample containers within outer package.
- 3) The outside of the inner package(s) to bear marking "RADIOACTIVE".
- 4) Radiation levels on contact of the outer package not to exceed 0.5 mR/hr.
- 5) Non-fixed contamination measurements on the outside of the outer package less than 2,400 dpm/100cm<sup>2</sup> and 24,000 dpm/100cm<sup>2</sup> alpha and beta, respectively.
- 6) The outer packaged marked with UN2910.
- 7) Transported to the shipping facility by a person trained in Dangerous Goods Shipping.

All radioactive materials shipments shall be approved by the Jacobs Radioactive Materials Shipping SME, prior to shipment.

## 3. Training

Site workers shall receive appropriate basic radiation awareness training commensurate with the risk. The training shall be provided by the Boeing RSO or the Jacobs RSO or designee as appropriate. The training will include:

- 1) Identification of radiation hazards associated with this project
- 2) Radiation hazards and safety basics
- 3) Emergency procedures to be followed

- 4) Procedures for reporting an actual or suspected exposure
- 5) The purpose of radiation monitoring equipment
- 6) The applicable regulations and those incorporated by reference
- 7) Identification of appropriate controls required to meet ALARA principals and regulatory requirements.

Additional training will be required for site workers, including radiation protection personnel, if action levels (ALs) are exceeded or working with or around known or suspected radioactive materials.

Jacobs Radiation Safety Personnel monitoring site conditions will be trained and/or qualified commensurate with the potential risk as required by the Boeing RSO or designee (for example, American National Standards Institute (ANSI) 3.1-qualified lead technician supported by additional trained individuals for work with known or suspected radioactive materials).

Radiation Worker Training will be provided to all workers that work with (i.e., sampling or remediation) or in areas that contain radioactive materials above the AL(s).

## **4. Dose and Contamination Limits, Monitoring, Action Levels, and Responses**

The U.S. Nuclear Regulatory Commission has established standards that allow safe exposures to 5,000 millirem per year for those who work with and around radioactive material, and 100 millirem per year for members of the public (in addition to the radiation we receive from natural background sources). To keep potential radiation dose ALARA, prevent dispersal of radioactive contamination, and prevent inadvertent creation or improper disposal of radiological materials, the ALs will be ten times the established background levels for dose, and gross counts per minute. Due to the variability in natural background radiation for various matrices (for example, brick, concrete, soil, aggregate), multiple background ALs may be developed and utilized to detect radioactive material during field work. The basic administrative response to exceedance of the AL from natural background radiation will be to:

- Safely pause work, instruct personnel to avoid the area, isolate the area, and minimize potential exposure
- Notify the Jacobs Project Manager (PM), the Health and Safety Manager (HSM), Boeing RSO and the Jacobs RSO/Field Radiation Operations Manager
- Document the location and radiation measurements:
  - For example, GPS coordinates in addition to pin flag or other physical marker (as approved by the client) or equivalent are sufficient to mark the location of the area
  - Contact, 1-foot, and 1-meter dose rates and gross counts per minute are standard measurements to document

This conservative approach mitigates the potential for project personnel to interact with radioactive constituents of concern, avoids the potential spread of radioactive contamination, and promotes proper management of potential radioactive waste. If elevated radioactivity is found, further instructions from the Boeing RSO and Jacobs RSO or designee will be provided, and/or additional safety controls will be implemented based on the level of hazard found.

## **5. Client Notification**

In the event radiation monitoring equipment indicates ALs are exceeded, field staff responses, including internal notifications, are described above.

The Jacobs RSO or designee will assist the Jacobs PM with communication to the client as necessary, following initial actions to place the site/area/personnel in a safe condition. This includes internal Jacobs notifications and actions directed by the RSO, designee, or Radiation Operations Manager.

## 6. Radiation Monitoring Equipment

Radiation detection equipment as listed in **Table 1** will be used for site radiation monitoring. In addition to the instrumentation listed below. All monitoring work will be documented in logs and/or forms provided by the Radiation Specialist. Qualified radiation safety personnel will perform the initial set up of equipment and initial, in-process, and as left radiation monitoring of general radiation conditions for personnel and equipment during site work to include spoils, equipment, samples, IDW, and suspected debris. Instruments shall be response checked daily, when in use (prior to and following any work).

**Table 1. Radiation Monitoring and Equipment Description**

Instrument	Tasks	Frequency	Response Check
<b>Radiation Dose Rate Meter:</b> Thermo Scientific RadEye PRD-ER	Before, during and after intrusive work: field checks of general area dose rates, soil, equipment, and debris,	Initially, periodically, and at the end of the task (see field instruction for details)	Daily (prior to any work)
<b>Gamma Radiation Detection Meter:</b> Ludlum Model 2221 and 44-10 2" x 2" sodium iodide (NaI) detector or equivalent	As found surface gamma scan. Before, during and after intrusive work: Field checks of general area and specific gross cpm values on soil, equipment, and debris	Initially, periodically, and at the end of the task (see field instruction for details)	Daily (prior to any work)
<b>Radioactivity Contamination Meter:</b> Ludlum Model 2360 meter with a Ludlum 43-93 alpha/beta probe or equivalent	Before, during and after intrusive work: field checks for removable activity, equipment, personnel, and debris	Initially, periodically and at end of task for hands, feet, equipment, and any debris that comes out of the hole	Daily (prior to any work)
<b>Radioactivity Contamination Meter:</b> Ludlum Model 12 with a Ludlum Model 44-9 or equivalent	Before, during and after intrusive work: field checks for removable activity, equipment, personnel, and debris	Initially, periodically and at end of task for hands, feet, equipment, and any debris that comes out of the hole	Daily (prior to any work)

## 7. Dosimetry

External dosimetry is required for all personnel entering the site boundaries unless specifically exempted by the Boeing and Jacobs RSOs, i.e. visitors.

## 8. Radiation Services Contacts

<b>Jacobs Program RSO</b>	<b>Field Radiation Operations Manager/Radioactive Materials Shipping and Low-Level Radioactive Waste (LLRW) Subject Matter Expert (SME)</b>
Name: Dustin Miller, CHP, RRPT	Name: Kevin Smallwood, RRPT
Mobile phone: (314) 240-0507	Mobile phone: (970) 250-5441

<b>Boeing RSO</b>
Name: Earl Sorrels
Mobile phone: (303) 949-6022



# **Jacobs Health and Safety Plan**

## **Attachment 12**

### **Personal Protection During Wildfire Smoke Conditions**

## Santa Susana Field Laboratory Personnel Protection during Wildfire Smoke Conditions

Adapted from the document, [Wildfire Smoke, A Guide for Public Health Officials, Revised July 2008](#) developed by the California Department of Public Health and 2019 Cal OSHA regulations, Santa Susana has established the following measures to ensure the protection of employees working in the field.



Smoke events often catch us off guard. Smoke is a complex mixture of carbon dioxide, water vapor, carbon monoxide, particulate matter, hydrocarbons and other organic chemicals, nitrogen oxides, and trace minerals.

Particulate matter is the principal pollutant of concern from wildfire smoke for the relatively short-term exposures (hours to weeks) typically experienced by the public. Particulate matter is a generic term for particles suspended in the air, typically as a mixture of both solid particles and liquid droplets.

Particles from smoke tend to be very small, with a size range near the wavelength of visible light (0.4 – 0.7 micrometers). Thus, smoke particles efficiently scatter light and reduce visibility.

As noted above, particulate matter exposure is the principal public health threat from short-term exposures to wildfire smoke. In addition, particles are respiratory irritants, and exposures to high concentrations of particulate matter can cause persistent cough, phlegm, wheezing, and difficulty breathing.

Most healthy adults will recover quickly from smoke exposure and will not suffer long-term consequences. However, certain sensitive populations may experience more severe short-term and chronic symptoms, for example, those with asthma or other respiratory disease, cardiovascular disease, and pregnant women.

### Strategies for Exposure Management at SSFL

Categories	Visibility in Miles	Particulate Matter Levels <sup>1</sup> (1-3 hour average, µg/m <sup>3</sup> )	Action
<b>Good</b>	11 miles and up	0-38	No action
<b>Moderate</b>	6 to 10	39-88	No action
<b>Unhealthy for Sensitive Personnel</b>	3 to 5	89-138	Notify and assess sensitive personnel
<b>Unhealthy</b>	1.5 to 2.75	139-350	Initiate use of N95 or P100 respirators for those working in field operations. Use goggles, if needed, to minimize eye irritation. Evaluate need for suspension of operations
<b>Very Unhealthy</b>	1 to 1.25	351-526	Initiate use of N95 or P100 respirators for those working in field operations. Use goggles, if needed, to minimize eye irritation. Evaluate need for suspension of operations
<b>Hazardous</b>	Less than 1 mile	Over 526	Evaluate need for suspension of operations

<sup>1</sup> In wildfire smoke, most particles are less than one micrometer, so the values obtained by measuring either PM<sub>10</sub> or PM<sub>2.5</sub> are virtually interchangeable, and are treated as such in this document. Therefore, in the table above, the different particle levels can be measured using either PM<sub>10</sub> or PM<sub>2.5</sub> monitors. Particulate readings should be taken for about 1-5 minutes to assess sustained particulate concentrations.

When using the visibility index to determine smoke concentrations, it is important to:

- Face away from the sun.
- Determine the limit of your visibility range by looking for targets at known distances (miles). The visible range is the point at which even high-contrast objects (e.g., a dark forested mountain viewed against the sky at noon) totally disappear.

At times, the visibility index may be hard to use, especially if specific landmarks at known distances are not available for judging visibility range, or at dawn or dusk. Furthermore, the above visibility categories for PM levels only apply in dry air conditions. For a given PM level, visibility decreases substantially at relative humidity above 65%, therefore, this method of estimation should not be used under conditions of high humidity.

**NOTE:** The length of SSFL is approximately 3 miles (E to W) and the width about 1 mile (N to S, not including the buffer zones) or about 2 miles from the northern most buffer zone to the southernmost buffer zone.

Cal OSHA Wildfire Smoke Emergency Order Requirements:

For field projects in the state of California, an emergency regulation (Wildfire Smoke Emergency Order 2019-0719-04E) set forth by state-run Cal/OSHA has been enacted to protect workers from the dangers of wildfire smoke (our offices and vehicles are exempt). For all projects located in California, Jacobs must take the following steps to protect workers:

- Identify harmful exposure to airborne particulate matter from wildfire smoke before each shift and periodically thereafter by checking the Air Quality Index (AQI) for Particulate Matter (PM) 2.5 in regions where workers are located. One way to check the AQI in your specific region is with the Environmental Protection Agency's [Air Now tool](#).
- Talk to the Project Manager and HSM to identify all required controls and actions.
- Reduce harmful exposure to wildfire smoke if feasible, for example, by relocating work to an enclosed building with filtered air or to an outdoor location where the AQI for PM 2.5 is 150 or lower.
  - Employees who are exposed to an AQI greater than 150 “for a total of one hour or less during a shift,” are exempt from this regulation.
  - Accordingly, employees who are outside only briefly during a work shift are likely exempt.
- If employers cannot reduce workers’ harmful exposure to wildfire smoke so that the AQI for PM 2.5 is 150 or lower, they must provide:
  - Respirators such as N95 masks to all employees for voluntary use if they chose to, if the AQI for PM 2.5 is between 150 to 500. This must be performed in accordance with Jacobs Respiratory Protection Plan, Appendix D of 29 CFR 1910.134 and Appendix B to Section 5141.1 of the California Wildfire Smoke Emergency Order 2019-0719-04E
  - Training on the new regulation, the right to obtain medical treatment without fear of reprisal, the health effects of wildfire smoke, and the safe use and maintenance of respirators shall be performed for all affected employees
- If employers cannot reduce workers’ harmful exposure to wildfire smoke and the AQI for PM 2.5 is greater than 500, they must provide:
  - Respirators such as N95 masks to all employees for Mandatory use. This must be performed in accordance with Jacobs Respiratory Protection Plan and 29 CFR 1910.134
  - The preferred action in this scenario is to remove the workers from the area.

Particulate Hazards outside of the state of California must also be evaluated. If a Jacobs field project is being affected by smoke from fires or other local particulate levels, follow the steps below:

- Evaluate the Air Quality Index (AQI) for Particulate Matter (PM) 2.5 in your region. One way to check the AQI in your specific region is with the Environmental Protection Agency's [Air Now tool](#).
- Reduce harmful exposure to wildfire smoke and other harmful particulates if feasible, for example, by relocating work to an enclosed building with filtered air or to an outdoor location where the AQI for PM 2.5 is 150 or lower.
- Contact you HSM to identify other control measures that may be needed.

# Jacobs Health and Safety Plan

## Attachment 13

### Evacuation Areas

# EMERGENCY INSTRUCTIONS

**EMERGENCY NUMBER 911** FROM CELL PHONE (818) 486-8911

**SANTA SUSANA FIELD LABORATORY**

**Location of Emergency Assembly Areas**

- 1 South of Bldg 31-436
- 3 North of Bldg 31-413
- 6 South West of Bldg 42-206
- 9 West of Bldg 44-034
- 10 North East of Bldg 44-055

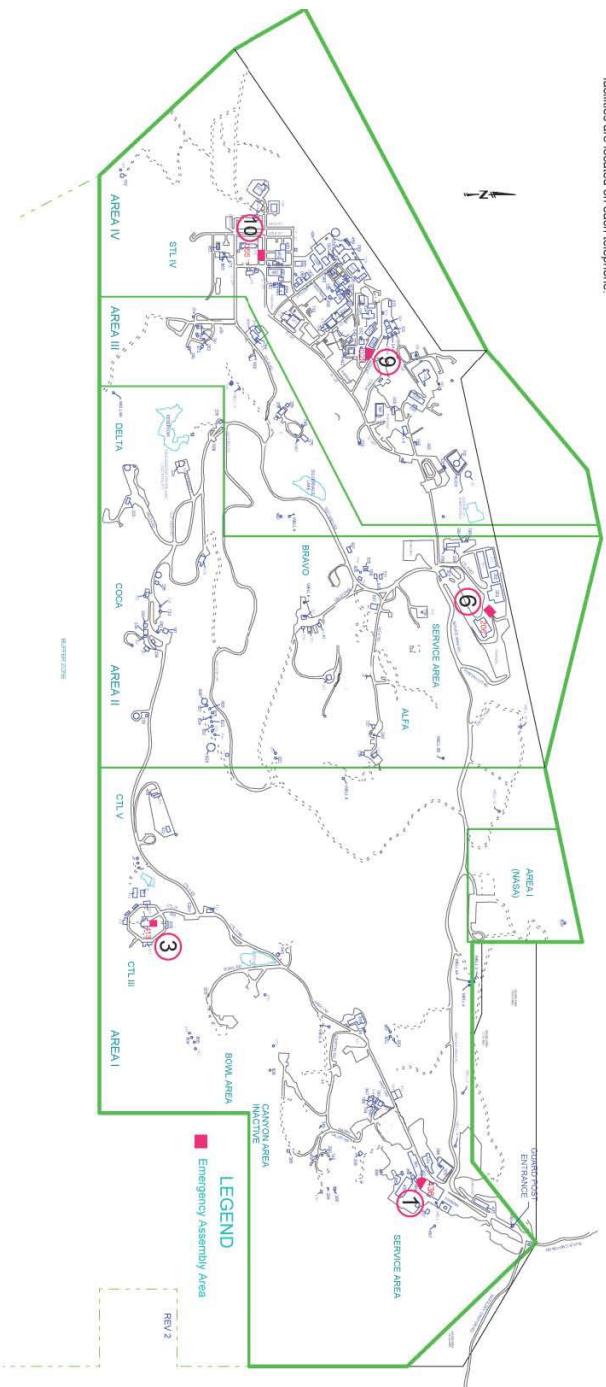
**Reporting Emergencies**  
Report any type of emergency, injury, illness, fire, explosion or chemical spill to the Boeing Control Center by using the facility emergency number. Be sure to give your name, location, nature of the emergency and telephone number. Use the building number and column number to describe emergency locations. Stand by, if possible, to direct responding personnel.

Emergency numbers for Rockwell/Boeing facilities are located on each telephone.

**Personnel Emergency Information**  
The public address system is the preferred means of informing personnel of any action they must take during an emergency. If an emergency should occur and no public address system is accessible:

- Security and Fire Services officers using bullhorns will direct personnel, or
- Managers will direct personnel

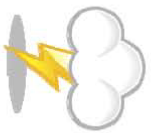
To protect yourself in the event of an emergency, familiarize yourself with the location of building exits and plan your emergency exit routes.  
Exit Routes and Assembly Areas  
For location of major exit routes, emergency exit doors and emergency assembly areas, see diagram.



# Jacobs Health and Safety Plan

## Attachment 14

### Lightning Safety



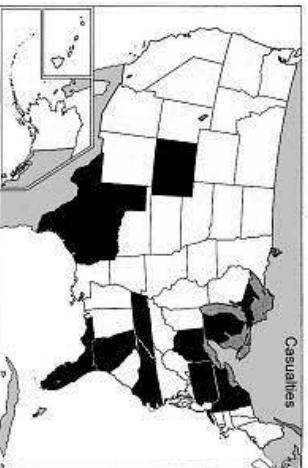
# Personal Lightning Safety Tips

1. **PLAN** in advance your evacuation and safety measures. When you first see lightning or hear thunder, activate your emergency plan. Now is the time to go to a building or a vehicle. Lightning often precedes rain, so don't wait for the rain to begin before suspending activities.
2. **IF OUTDOORS...** Avoid water. Avoid the high ground. Avoid open spaces. Avoid all metal objects including electric wires, fences, machinery, motors, power tools, etc. Unsafe places include underneath canopies, small picnic or rain shelters, or near trees. Where possible, find shelter in a substantial building or in a fully enclosed metal vehicle such as a car, truck or a van with the windows completely shut. If lightning is striking nearby when you are outside, you should:
  - A. **Crouch down.** Put feet together. Place hands over ears to minimize hearing damage from thunder.
  - B. **Avoid proximity** (minimum of 15 ft.) to other people.
3. **IF INDOORS...** Avoid water. Stay away from doors and windows. Do not use the telephone. Take off head sets. Turn off, unplug, and stay away from appliances, computers, power tools, & TV sets. Lightning may strike exterior electric and phone lines, inducing shocks to inside equipment.
4. **SUSPEND ACTIVITIES** for 30 minutes after the last observed lightning or thunder.
5. **INJURED PERSONS** do not carry an electrical charge and can be handled safely. Apply First Aid procedures to a lightning victim if you are qualified to do so. Call 911 or send for help immediately.
6. **KNOW YOUR EMERGENCY TELEPHONE NUMBERS.**



# Lightning Trivia

- When you hear thunder, you are already within the range where the next ground flash may occur. N. Kitagawa of Central Lightning Protection, Inc. and A. Sugita and S. Takahashi of Franklin Japan determined the average intervals between lightning strikes in order to estimate how much time someone has to seek shelter. Their news is far from encouraging.
- To avoid being struck by lightning, you should seek shelter when you hear even the faintest thunder. Some of the best places to take refuge are enclosed buildings, or cars and buses (but don't touch the metal!). In case there are no safe spaces nearby, bend into a crouching position until there is a break in the storm.
- Isolated trees, telephone booths, and open structures like gazebos or porches make poor lightning shelters. If there is a tall object nearby, move as far away as possible - at least 2 meters (7 ft). Standing next to tall isolated objects like poles or towers makes you vulnerable to secondary discharges coming off those objects.

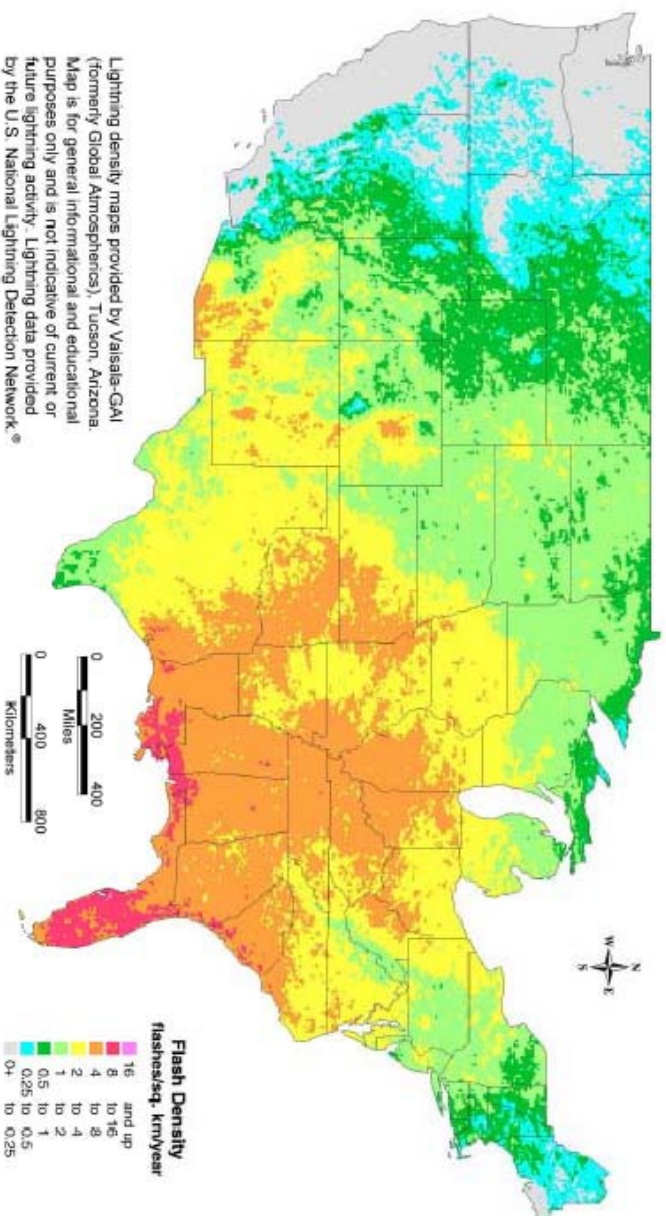


- The top ten states in number of lightning casualties (deaths and injuries combined). Florida leads the list, with twice as many casualties as any other state. Other states represented are Georgia, Tennessee, North Carolina, New York, Pennsylvania, Ohio, Michigan, Colorado and Texas.

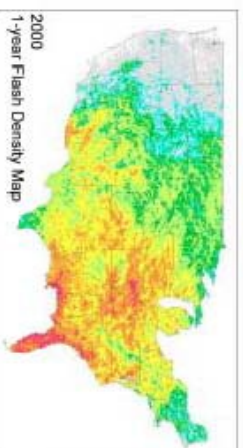
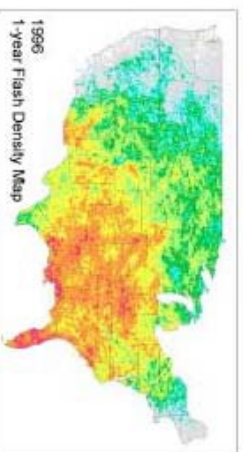
Source: National Lightning Safety Institute (NLSI)



## 5-year Flash Density Map — U.S. (1996–2000)



Lightning density maps provided by Vaisala-GAI (formerly Global Atmospheric), Tucson, Arizona. Map is for general informational and educational purposes only and is not indicative of current or future lightning activity. Lightning data provided by the U.S. National Lightning Detection Network.®



The 5-year Flash Density Map shows the average amount of lightning recorded in 1996–2000. The average amount of lightning that occurs in any given area varies significantly from year to year, as shown in the annual maps for 1996 and 2000.

© U.S. Weather Service (2002)

# Little Known Lightning Information

## **THE AVERAGE DISTANCE BETWEEN SUCCESSIVE FLASHES IS GREATER THAN PREVIOUSLY KNOWN.**

Old data said successive flashes were on the order of 3-4 km apart. New data shows half the flashes are some 9 km apart. The National Severe Storms Laboratory report concludes with a recommendation that: "It appears the safety rules need to be modified to increase the distance from a previous flash which can be considered to be relatively safe, to at least 10 to 13 km (6 to 8 miles). In the past, 3 to 5 km (2-3 miles) was as used in lightning safety education."

**Source:** Separation Between Successive Lightning Flashes in Different Storms Systems: 1998, Lopez & Holle, from Proceedings 1998 Intl Lightning Detection Conference, Tucson AZ, November 1998.

## **A HIGH PERCENTAGE OF LIGHTNING FLASHES ARE FORKED.**

Many cloud-to-ground lightning flashes have forked or multiple attachment points to earth. Tests carried out in both the USA and Japan verify this in at least half of negative flashes and more than seventy percent of positive flashes. Present day lightning detectors may not be able to discriminate between the several forks from the same flash.

**Source:** Termination of Multiple Stroke Flashes Observed by Electro- Magnetic Field: 1998, Ishii, et al. Proceedings 1998 Intl Lightning Protection Conference, Birmingham UK, Sept. 1998.

## **LIGHTNING CAN SPREAD OUT SOME 60 FT. UPON STRIKING EARTH'S SURFACE**

Radial horizontal arcing has been measured at least 20 m. from the point where lightning enters the earth. Depending upon soils characteristics, safe conditions for people and equipment near lightning termination points (ground rods) may need to be re-evaluated.

**Source:** 1993 Triggered Lightning Test Program: Environments Within 20 meters of the Lightning Channel and Small Are Temporary Protection Concepts: 1993, SAND94-0311, Sandia Natl Lab, Albuquerque NM.

## **LIGHTNING PROTECTION SYSTEMS PROVIDE LIMITED PROTECTION.**

"What we found out was that the lightning protection system played a limited role in directing current from a lightning strike ... current traveled through the rebar, through concrete, through pipes, through cables, through vent stacks, and through the electrical system... " - Results of rocket-triggered testing.

**Source:** Marvin Morris, Electromagnetic Test and Analysis Dept., as quoted in Sandia Lab News, April 25, 1997, Sandia Natl Lab, Albuquerque NM.

Whenever there is lightning, take precautions to stay out of harm's way, even when you are inside a building.

"If you can see it, flee it; if you can hear it, clear it."



# **Jacobs Health and Safety Plan**

## **Attachment 15**

### **Vehicle Accident Guidelines**

## VEHICLE ACCIDENT INSTRUCTIONS (US & Canada)

### Jacobs Owned or Leased Vehicle Damage only:

You are not required to submit the Vehicle Incident Report to Risk Management for incidents involving ONLY damage to Jacobs personnel or property. (Example: owned/leased/rental vehicles where single vehicle runs off road). In these instances:

- Notify your supervisor, HSE representative and Fleet Management ([JacobsUSAFleet@Jacobs.com](mailto:JacobsUSAFleet@Jacobs.com))
- If our employee is injured, follow procedures for reporting a workers' compensation claim
- If you have questions, contact your Risk Management representative.

### Vehicle Damage or Injury to Members of the Public:

- Complete and submit the attached Vehicle Intake Form
- If necessary, move vehicles to a safe location and wait for police.
- Aid the Injured - Do not move injured individuals unless absolutely necessary. Warn other drivers.
- Call the Police – Give exact location and advise if medical help is needed.
- Don't Comment – Do not make/sign any statement concerning who was at fault. Give out only information required by authorities.
- Notification – Report the accident to your Department Manager, your HSE Representative and Global Risk Management.
- Serious accidents and accidents with injuries: Report as soon as possible, immediately following the accident. Do not wait for a copy of the police report to notify Global Risk Management of the incident.
- Accidents without injuries: Report within twenty-four (24) hours of the accident.
- Vehicle Accident Report – The Jacobs Vehicle Accident Report must be completed and sent to your HSE Representative and [AutoClaims@Jacobs.com](mailto:AutoClaims@Jacobs.com)

### Rental Car Incidents:

- For incidents involving a rental car that was rented through BCD Travel or Concur Travel for approved work business, you must file an auto claim directly with the rental car company.
- For incidents involving Rental Vehicles with injuries to Members of the Public, complete and submit the attached Intake Form to Global Risk Management.

### Questions

Contact: Zane Wilson ([Zane.Wilson@Jacobs.com](mailto:Zane.Wilson@Jacobs.com)), Global Risk Management Department

Phone: 214 583-8417

Email: [AutoClaims@Jacobs.com](mailto:AutoClaims@Jacobs.com)



US & CANADA  
VEHICLE ACCIDENT REPORTING & INTAKE FORM

Email Completed form to: [AutoClaims@Jacobs.com](mailto:AutoClaims@Jacobs.com) For Questions Contact: 214 583-8417  
Location Code: \_\_\_\_\_  
Company/Subsidiary Name: \_\_\_\_\_  
Line of Business: People & Places Solutions  Critical Mission Solutions  Corporate Functions

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***Incident Location***

Date of Accident: \_\_\_\_\_ Time of Accident:  a.m.  p.m.  
Location of Accident: Client Facility/Project Site  Highway  Other (specify)  \_\_\_\_\_  
Address: \_\_\_\_\_  
Nearest Intersection: City \_\_\_\_\_ State \_\_\_\_\_

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***Company Vehicle Information***

Company Vehicle Driver: \_\_\_\_\_ Driver Date of Birth: \_\_\_\_\_  
Office/Project Assigned to: \_\_\_\_\_  
Name of Passenger(s): \_\_\_\_\_  
Work Address: \_\_\_\_\_  
Home Address: \_\_\_\_\_ Home/Cell Phone: \_\_\_\_\_  
Supervisor Name: \_\_\_\_\_ Supervisor Phone: \_\_\_\_\_  
Vehicle Owner: \_\_\_\_\_ Company Owned  Leased  Rental  Personal   
If rental vehicle, name of agency: \_\_\_\_\_  
If rental, reservation through: BCD Travel  Concur  Rental Desk   
If leased vehicle, name of agency: \_\_\_\_\_  
Vehicle Number: \_\_\_\_\_ Make & Model: \_\_\_\_\_  
Vehicle License Number: \_\_\_\_\_ Vehicle ID Number \_\_\_\_\_  
Has Driver Completed Jacobs Recognized Driver Training: Yes  No  Unknown

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***Other Driver(s) Information***

Other Driver(s) Name: \_\_\_\_\_  
Home Address: \_\_\_\_\_  
Phone Number: Home/Cell: \_\_\_\_\_ Work: \_\_\_\_\_  
Vehicle Owner: \_\_\_\_\_ Relation to Driver: \_\_\_\_\_  
Vehicle Make & Model \_\_\_\_\_  
Insurance Company \_\_\_\_\_  
Insurance Agent: \_\_\_\_\_ Agent Phone Number: \_\_\_\_\_  
Policy Number: \_\_\_\_\_

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US & CANADA  
VEHICLE ACCIDENT REPORTING & INTAKE FORM

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***Incident Description***

Contact with: Other Vehicle(s)  Fixed Object  Pedestrian  Other

Details:

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Witnesses:

Citations Issued: Jacobs Driver: Yes  No  Other Driver: Yes  No

Police Contacted: Yes  No  Agency: \_\_\_\_\_

Officer name/badge: \_\_\_\_\_

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***Injuries***

Jacobs Employee Yes  No  Other Driver/Passengers: Yes  No

If yes, describe \_\_\_\_\_

Other Driver/Passengers: Yes  No

If yes, describe \_\_\_\_\_

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***Vehicle Damages***

Company Vehicle: \_\_\_\_\_

Location of Company Vehicle \_\_\_\_\_

Other Vehicle Damage: \_\_\_\_\_

Location of Other Vehicle: \_\_\_\_\_

**Property Damage (Do not include vehicle damages listed above)**

Property Owner: \_\_\_\_\_

Describe Damages: \_\_\_\_\_

Contact info for Owner: \_\_\_\_\_

Comments: \_\_\_\_\_

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US & CANADA  
VEHICLE ACCIDENT REPORTING & INTAKE FORM

*Diagram of Incident* (attach additional documents if needed):

Report Submitted by: \_\_\_\_\_ Date: \_\_\_\_\_  
Reporter's Email Address: \_\_\_\_\_ Phone: \_\_\_\_\_

# **Jacobs Health and Safety Plan**

## **Attachment 16**

### **Fire Prevention during Vegetation Mowing**

## Fire Prevention during Vegetation Mowing

- When possible, schedule mowing and vegetation reduction operations during cooler and wetter conditions (e.g., fall-spring). During warmer conditions, schedule work early in the day; preferably before noon.
- When feasible, utilize equipment that is a lower fire risk (e.g., stringed weed whacker).
- Review the current area Fire Danger Level for the local area. For example, see local [California Fire Danger Level](#). Do not conduct mowing operations during a red flag warning.
- Check weather conditions to determine if conditions are safe for mowing. Per California Fire, if all of the following conditions exist, it is considered unsafe for mowing and work shall not be started, or will be suspended if already started:
  - > 80 degrees Fahrenheit
  - < 30 percent relative humidity
  - > 10 mile per hour winds
  - Moderate or higher Fire Danger Level.
  - Note: Hand tools and stringed weed wacker may be used in these conditions.
- Be aware that the weather changes throughout the day and should be checked periodically to verify safe conditions still exist. Use the [NWS mobile weather](#) site to check current fire conditions.
- The project team shall notify the local fire department prior to mowing operations, and provide project contact, work scope, hours of operation and site access information. Any local fire restrictions must be complied with.
- The operator shall inspect the area in front of mower for rocks and other obstacles that could cause a spark when hit by mower blade. Areas with identified hazards shall be avoided with the mower and cleared by using an appropriate tool (e.g., weed whacker, tri-blade, hand tool or brush hog).
- Maintain an appropriate clearance between mower blades and the ground (e.g., preferably greater than 10 inches). If ground strikes are observed, stop mowing and re-evaluate vegetation removal method.
- Operator shall periodically stop to inspect mower to ensure cut vegetation is not accumulating around moving or hot equipment components. If observed, operator shall remove vegetation prior to resuming mowing operations.
- Plan operations where areas of greatest risk are mowed early in the day to minimize the chance of ignition and spread of wild fire. Start all mowing from a safe “anchor point.” If a fire started from mowing burns downwind, it will be away from the mower and uncut vegetation.
- When substantial fire risk is present (i.e., Fire Danger is “HIGH”), the operation must be accompanied by a water truck or trailer with a charge hose and fire watch.
- Where feasible, when mowing dry material, deploy water with the water truck or water trailer fire hose ahead of mower to increase moisture in the vegetation.
- During mowing operations, designate a fire watch responsible for monitoring for smoldering behind the path of the mower.
- During mowing operations, a dedicated fire watch shall have appropriate fire response equipment within 50 feet, based on fire risk and conditions:
  - Water truck or trailer, with pump on and hose charged (Fire Danger Level is “HIGH”)
  - [5 gallon backpack-style water fire extinguisher](#) (Fire Danger Level is “MODERATE”)
  - Adequate fire extinguisher (typically 10 or 20 lb. for mower or heavy equipment operations)
  - Round point shovel

- Reliable communication method with the project Safety Coordinator and local fire department.
- If smoldering or fires are observed the project team shall immediately notify the fire department. Only attempt to extinguish the fire if it can be performed safely based on site conditions (wind speed/direction, fuel load, size of fire and escape routes). If fire cannot be extinguished initially with equipment onsite, crews shall evacuate the area and await fire department response.
- Project personnel shall be annually trained on fire equipment use and extinguishing incipient stage fires.
- Spark arresters are required on all portable gasoline powered equipment including tractors, weed whackers and mowers. When possible, utilize battery powered equipment.
- Hot exhaust pipes and mufflers can start fires. Never drive motor vehicles into dry grass or brush. Frequently check exhaust systems for grass or brush that may be caught on a vehicle exhaust system.

Source [California Department of Forestry and Fire Protection, Fire Safe Mowing Guide](#)

# Jacobs Health and Safety Plan

## Attachment 17

### Poison Oak Fact Sheet



## Poison Oak Fact Sheet

### Overview

Poison oak is typically found in brush or wooded areas. Plants are more commonly found in moist areas or along the edges of wooded areas. Shrubs are usually 12 to 30 inches high, but can grow much higher, or can also be a tree-climbing vine. The plant has triple leaflets and short, smooth hair underneath. Plants are red and dark green in spring and summer, with yellowing leaves anytime especially in dry areas. Leaves may achieve bright reds in fall, but plants lose its (yellowed, then brown) leaves in winter, leaving toxic stems. The plant may have yellow or green flowers and/or clusters of green-yellow or white berries. All parts of the plant remain toxic throughout the seasons. These plants contain urushiol a colorless or pale-yellow oil that oozes from any cut or crushed part of the plant, including the roots, stems and leaves and causes allergic skin reactions when contacted. The oil is active year-round. The plant thrives in California, Oregon and Washington.

Urushiol is a substance in every fiber of the poison oak plants and causes dermatitis. When it gets on the skin, it binds with the proteins in the skin after about 10 minutes and becomes very difficult to get off. Urushiol does not evaporate and can remain active for years after being picked up on tools, clothing, or vehicles.

### Contamination

Contamination with poison oak can happen through several pathways, including:

- Direct skin contact with any part of the plant (even roots once above ground foliage has been removed).
- Contact with clothing that has been contaminated with the oil.
- Contact from removing shoes that have been contaminated (boots are coated with urushiol oil).
- Sitting in a vehicle that has become contaminated.
- Contact with any objects or tools that have become contaminated.
- Inhalation of particles generated by weed whacking, chipping or vegetation clearing.

### Control Measures

- Become familiar with the identity of poison oak (see below).
- Whenever possible, avoid entering areas with poison oak. Move work zones to avoid poison oak plants.

If you must work on a site with poison oak, the following precautions are necessary:

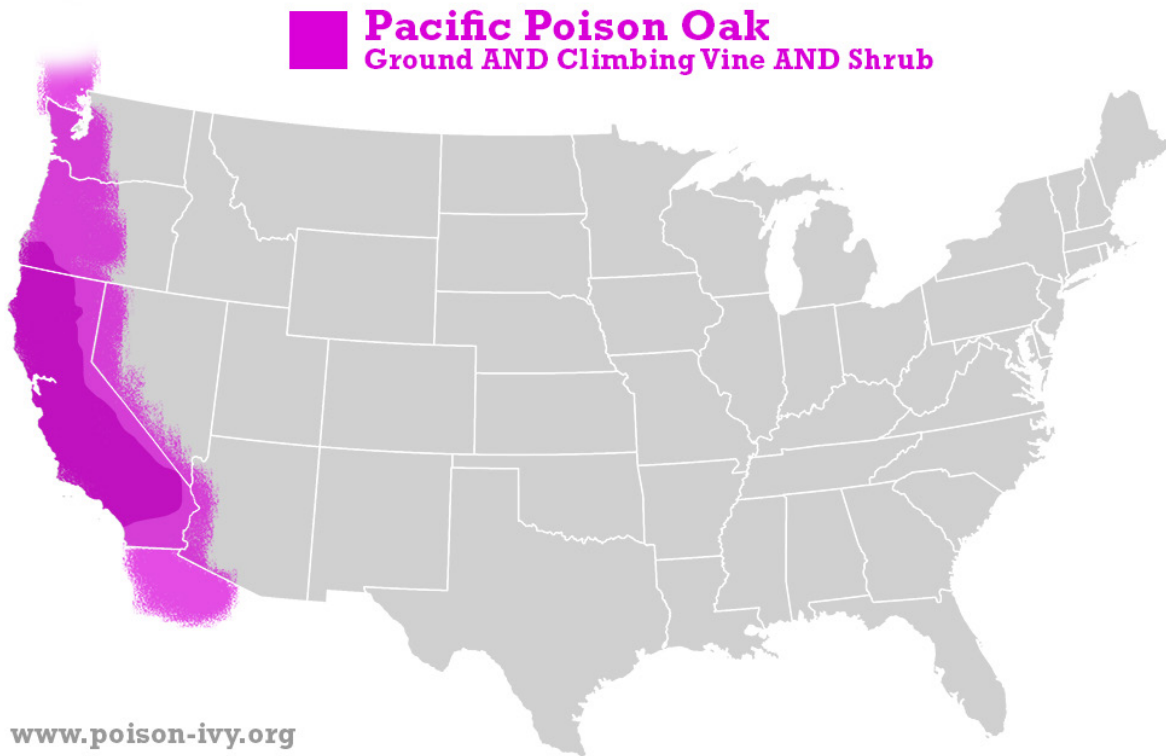
- Utilize heavy equipment (e.g. backhoe, skid steer) to remove poison oak from the area. Using heavy equipment reduces the likelihood of skin contact, when compared to using hand tools. Using weed trimmers is not permitted as urushiol may become airborne and become an inhalation hazard.
- Do not drive vehicles onto the site where they will come into contact with poison oak. Vehicles that need to work in the area, such as drill rigs or heavy equipment, must be washed as soon as possible after leaving the site.

- All tools used in the poison oak area, including those used to cut back poison oak, surveying instruments used in the area, air monitoring equipment or other test apparatus, must be decontaminated before they are placed back into the site vehicle. If on-site decontamination is not possible, use plastic to wrap any tools or equipment until they can be decontaminated.
- Use IvyX or similar products to prevent poison oak contamination (pre-contact). Follow all directions for application.
- Personal protective equipment, including dedicated work clothes, long sleeves/pants, gloves, coveralls, gloves, chaps, and/or boot covers must be worn. Where poison oak avoidance can not be maintained, Tyvek clothing should be worn. PPE must be placed into plastic bags and sealed if they are not disposed immediately into a trash receptacle.
- As soon as possible following the work, shower to remove any potential contamination. Any body part with suspected or actual exposure should be washed with Zanfel, Tecnu or other product designed for removing urushiol. If you do not have Zanfel or Tecnu, wash with cold water. Do not take a bath, as the oils can form an invisible film on top of the water and contaminate your entire body upon exiting the bath.
- Tecnu should be used to decontaminate equipment and clothing. Follow Tecnu instructions for decontaminating these items. Standard soap and water will not emulsify urushiol oils. Urushiol remains potent for years at a time.
- If you do come into contact with one of these poisonous plants and a reaction develops, contact JacobsCare and ask to speak to an occupational nurse. Be aware that in some instances, there can be a delay between contact with poisonous plants and the symptoms. If you are working near poison oak or other poisonous plants and feel a mild skin irritation, apply Zanfel/Tecnu immediately and contact the occupational nurse.
- If a member of the project team is highly susceptible (from previous exposures), they should avoid being tasked to work in areas with known poisonous plants. Consider work accommodations such as having the employee perform other tasks, if possible.

### Poison Oak Commercially Available Control Measures and First Aid

Product	Used For	Container
<a href="#">IvyX Pre Contact</a>	Acts as barrier to protect against Urushiol	Towlettes, bottles, spray
<a href="#">Tecnu Original</a> , <a href="#">IvyX Post Contact Cleanser</a> ,	Post contact cleanser, removes Urushiol from skin, equipment and clothing.	Towlettes, bottles
Dial/Dawn Dish Soap	Per <a href="#">medical literature</a> , detergent/dish soap can also be used to decontaminate equipment.	Bottles
<a href="#">Zanfel</a> , <a href="#">Tecnu Extreme</a>	Initial removal of Urushiol from dermal areas with rash. Treat rash 1-2 times to extract urushiol. Relieves itching.	Small container
<a href="#">Calagel</a> , Tecnu Rash Relief & many other first aid products. Follow JacobsCare guidance for first aid treatment.	First aid treatment for existing rashes, typically contain antiseptic, analgesic, antipruritic, antihistamine and astringent.  Follow JacobsCare occupational nurse recommendations.	Spray, gel

## Pacific Poison Oak Range



## Poison Oak Identification Pictures



*This young sprout of poison oak looks identical to eastern poison ivy, with pointed leaves.*



*Typical red poison oak leaves in fall.*



POISON OAK FACT SHEET



*Poison oak in winter, no leaves.*



*Poison oak leaves with a sharply notched look growing up a thick vertical stalk, shrub form of the plant.*



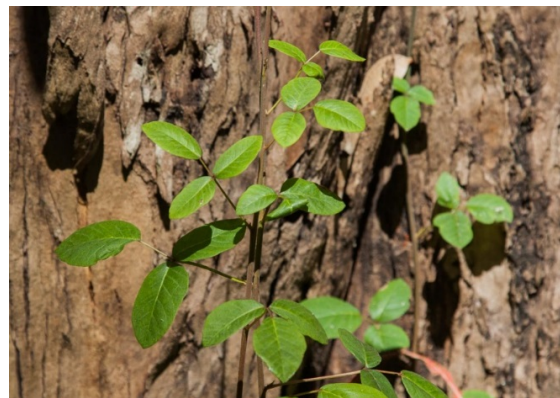
*Poison oak leaves that look like an actual oak.*



*Curly, waxy leaves common near salt water.*



*Leaves have folded up, possibly to save moisture.*



*Leaves do not have notches, but is poison oak.*





*Ground vine can cross trails.*



*Berries hanging from an overhead vine in spring.*



*Berries drying in the fall.*



*Poison oak can climb a tree with very little in the way of roots to grab onto the tree.*



*Both bright red and bright green leaves on the same plant.*



*Large hedge of poison oak, typically, stays lower down the slope where there is more moisture.*

Photograph source: [www.poison-ivy.org](http://www.poison-ivy.org)

Poison Oak Identification

**Pacific Poison Oak  
ALMOST ALWAYS  
has LEAVES of THREE**



**RARELY HAS MORE**



**Pacific Poison Oak  
ALWAYS GROWS  
LEFT THEN RIGHT**



**NEVER SIDE BY SIDE**

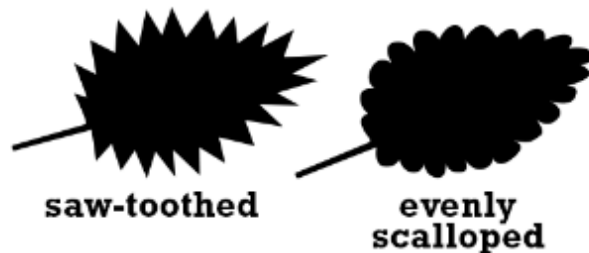


**NEVER HAS THORNS**



**of any kind**

**NEVER HAS  
EDGES LIKE THESE**



**saw-toothed**

**evenly  
scalloped**

## Decontamination, including Tecnu, IvyX and Zanfel Instructions:

### Before the rash has started:

- Apply Tecnu/IvyX to exposed unwetted skin within 2-6 hours after exposure to poisonous plants.
- Rub vigorously for 2 minutes to remove oil and other contaminants from skin. If hyper-sensitive, wash entire body with Tecnu/IvyX, rinse in a cool shower (not a bath).
- Rinse skin clean with cool running water and wipe off with a wash cloth. Scrub under nails with a brush. Repeat.
- Do not wash with hot water, as it opens the pores, which can allow the urushiol to penetrate deeper, possibly increasing your chances of developing a rash.

### As soon as rash appears (Zanfel):

- Wet the affected area.
- Squeeze 1 and 1/2 inches of Zanfel onto one palm (Product will not work if less than 1 and 1/2 inches is used).
- Wet and rub both hands together for 10 seconds, working the product into a paste. This will activate the ingredients. (Do not bypass or modify this step).
- Rub both hands (up to 3 minutes, if needed) on the affected area, working Zanfel into the skin until there is no sign or itching (15 seconds is typical for mild to moderate reactions).
- Rinse area thoroughly. If the itching returns (which could be several hours later), rewash following steps 1 through 5.

### To clean cuffs of gloves, boots, snake chaps and worn pants:

- Saturate clothing, boots and snake chaps with Tecnu/IvyX directly, with a weed sprayer or in a plastic bucket.
- Scrub, rub or brush for two minutes.
- Rinse with water.
- Degreasing agent (Dawn dish soap) or rubbing alcohol can be used after Tecnu/IvyX as an additional cleaning agent.

### To clean clothing at end of field day (home or hotel):

- Remove clothing while wearing nitrile gloves.
- Place clothes in garbage bag, or directly in to bucket.
- Saturate unwetted clothing with Tecnu, IvyX or Dawn Dish Soap in a bucket for several minutes. Per Tecnu manufacturer, this step is not required, but should be considered for clothing with known urushiol oil contact. Alternatively, a capful of IvyX Post Treatment can be added to laundry per the IvyX manufacturer.
- Launder by itself with detergent, heaviest load option, on longest cycle setting and hot water.
- Laundry detergents used should be degreasing type (e.g. Tide).
- Do not overload washer. Allow for agitation. Two cycles should be used when possible.
- Do not wash urushiol impacted clothes with uncontaminated clothes.
- Run the washer for one cycle empty, with bleach, before washing uncontaminated clothes.

- Never re-wear clothing potentially impacted by urushiol without washing.

#### To clean tools, equipment or gear:

- Apply directly or wipe down tools with a cloth saturated with Tecnu/IvyX.
- After two minutes, wash with soap and water or a clean towel.
- Degreasing agent (Dawn dish soap) or rubbing alcohol can be used after Tecnu/IvyX as an additional cleaning agent.

#### To clean vehicles:

- Wipe down vehicles (e.g. vinyl seats, door handles) with a cloth saturated with Tecnu/IvyX and/or Dawn dish soap.
- Wipe with soap and water.
- Degreasing agent (Dawn dish soap) or rubbing alcohol can be used after Tecnu/IvyX as an additional cleaning agent.

Sources: Teclab (Tecnu); Zanafel; [Cortex \(IvyX\)](#); [Oregon State University Poison Oak Facts](#)

**Note:** Always read product instructions prior to use.

## Poison Oak Signs and Symptoms

Most people (85 percent) develop a rash when they get urushiol on their skin. The first time you get this oil on your skin, you may not get a rash. The next time this oil gets on your skin you can become sensitive to it. Once you are sensitive to it, a rash appears. About 15 percent of people do not become sensitive to this oil and never develop a rash.

If this is your first contact with urushiol, you may not see a rash. Or it may take a week for the rash to appear. The rash also can appear within hours or a few days. If you have a reaction to the oil, you can have these signs (what you see) and symptoms (what you feel):

- Itchy skin.
- Redness or red streaks.
- Hives.
- Swelling.
- An outbreak of small or large blisters, often forming streaks or lines.
- Crusting skin (after blisters burst).

The rash is very itchy and can appear on any part of the body. The rash can continue to appear on new parts of the body when:

- Other parts of the body touch the oil.
- You spread the oil on your skin by touching other parts of your body.

The fluid in blisters is not contagious. Itchiness, swelling and broad spreading of the rash can cause extreme discomfort. Inhalation can cause severe lung irritation. Following inhalation, emergency care is required for difficulty breathing. A medical evaluation should be immediately sought for swelling and rash on the face or genitals, and for anyone who has had a severe reaction in the past. Most rashes will heal in five to 12 days, but in some cases can last for weeks.

Signs of a severe poison oak case:



- You have trouble breathing or swallowing.
- The rash covers most of your body.
- You have many rashes or blisters.
- You experience swelling, especially if an eyelid swells shut.
- The rash develops anywhere on your face or genitals.
- Much of your skin itches, or nothing seems to ease the itch.

For all symptoms, including minor rashes, contact JacobsCare and ask to speak to an occupational nurse. Also notify the occupational nurse if symptoms change.

## Poison Oak First Aid Treatment

Immediately rinse skin with Zanafel and cold water as detailed above.

Apply wet compresses and hydrocortisone cream to the skin to reduce itching and blistering. An astringent may be utilized (e.g. Dome Boro). Follow the directions on all products. Do not apply to broken skin, such as open blisters.

Oatmeal baths may relieve itching.

An oral antihistamine such as diphenhydramine (Benadryl) can be taken to help relieve itching. Follow directions on the package. Drowsiness may occur, occupational health providers shall be consulted.

Contact JacobsCare occupational health nurse to verify first aid treatments.

Perform a comprehensive decontamination of all equipment, clothing and vehicles.

Source: [AAD](#), [CDC](#), [WebMD](#) and Workcare

# **Jacobs Health and Safety Plan**

## **Attachment 18**

### **Hazard Impact Identification Risk Assessment**



<b>Task Hazard/Impact Identification and Risk Assessment (HIRRA) - formerly Activity Hazard Analysis</b>			Date of assessment:	Page: 1 of 4
Task: Site Walk	Project Manager:	Site Supervisor:	Version	
Safety Liaison:	Environmental Manager:	Health and Safety Manager:		

<b>Brief description of work</b>		<b>Project #:</b>	
<b>Site/ Location of work</b>		<b>Project Name:</b>	
<b>Assessed by</b>			
<b>Review cycle</b>	Where any significant change to work or environment occurs, a thorough review of the risk assessment must take place and a new method statement written if required.		

<p>Perform an initial and residual risk calculation (see instructions below). Refer to Table 1 in the PHSEP for the overall hazard/environmental impact assessment.</p>	Initial Overall Risk Assessment Code (RAC)		Final Overall Risk Assessment Code (RAC)			
	<b>Risk Assessment Code (RAC) Matrix</b>					
<p>Consider all categories in the risk assessment including injury/illness, environment, reputation, economic/material production, motor vehicle incidents (see IB-HS-WI-0101-IB, P&amp;PS HSE Risk Assessment and Safe System of Work). Severity levels match the WPS ratings – 1 is lowest and 5 is highest.</p>	<p><b>Incident Actual or Potential Severity Level</b></p>	<p style="text-align: center;"><b>Probability</b></p>				
		<p>5 4 3 2 1</p>	<p>Highly Unlikely (1)</p>	<p>Unlikely (2)</p>	<p>Possible (3)</p>	<p>Likely (4)</p>
<p>Step 1: Review each "Hazard" and "Environmental Impact" in Table 1 of the PHSEP without regard for any controls in place and indicate overall RAC in "Initial Overall Risk" box above. Refer to IB-HS-WI-0101-IB, P&amp;PS HSE Risk Assessment and Safe System of Work for the expanded risk assessment chart (review injury/illness, environment, reputation, material production and motor vehicle incident and associated probability and severity definitions).</p> <p>Step 2: Identify the RAC (probability vs. severity) as H, M, or L for each "Hazard" or "Environmental Impact" after controls are in place. Annotate the final overall highest RAC in the upper right box.</p>		<p>5    10    15    20    25</p> <p>4    8    12    12    20</p> <p>3    6    9    12    15</p> <p>2    4    6    8    10</p> <p>1    2    3    4    5</p>				









<b>Task Hazard/Impact Identification and Risk Assessment (HIRA) - formerly Activity Hazard Analysis</b>			Date of assessment:	Page: 4 of 4
Task: Site Walk	Project Manager:	Site Supervisor:	Version	
Safety Liaison:	Environmental Manager:	Health and Safety Manager:		

<b>Task Hazard/Impact Identification and Risk Assessment Sign-Off</b>				
Print Name	Signature	Role on Project	Date/Time	
Print Name	Signature	Role on Project	Date/Time	
Print Name	Signature	Role on Project	Date/Time	
Print Name	Signature	Role on Project	Date/Time	
Print Name	Signature	Role on Project	Date/Time	
Print Name	Signature	Role on Project	Date/Time	
Total Crew Members for Task (Jacobs):		Total Crew Members for Task (Subcontractors):		

# **Jacobs Health and Safety Plan**

## **Attachment 19**

### **Lock Out Tag Out Procedure and Electrical Safety Permits**



**EQUIPMENT-SPECIFIC LOCKOUT/TAGOUT PROCEDURE DEVELOPMENT FORM**

Project name: Boeing Santa Susana Field Laboratory Project No.: 706331CH  
Equipment identity (name, number, etc.): Extraction well control panel and appurtenances, treatment plant control panel  
Equipment location: Numerous extraction wells throughout the Santa Susana Field Laboratory (Boeing, NASA wells)  
Authorized employee that developed this procedure: James Culverwell, Sam Sundahl Date: 07/17/2020

**Purpose**

This procedure shall be used by CH2M to establish the minimum requirements for the lockout/tagout of energy isolating devices whenever servicing and maintenance activities are performed on the above equipment. It shall be used to ensure that the equipment is stopped, isolated from all potentially hazardous energy sources and locked out and tagged before employees perform any servicing and maintenance where the unexpected energization, start-up of the equipment, or release of stored energy could cause injury.

**Compliance with this Procedure**

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout/tagout. The authorized employees are required to perform the lockout/tagout in accordance with this procedure. All employees, upon observing equipment that is locked/tagged out shall not attempt to start, energize, or use the equipment.

**Authorized Employee**

Jacobs System Integrators  
Jacobs System Integrators

**Specific servicing and maintenance activity to be performed**

LOTO, commission, troubleshoot extraction well control systems  
LOTO, replace PLC CPU, testing of GETS control system

**Required Training for Authorized Employees**

LOTO, Electrical Safety (Jacobs Learning Management System); NFPA 70E if exposed to energized electrical components >50V troubleshooting, repairing or replacing electrical components

**Sequence of Initiating Lockout/Tagout Control**

- 1) Notify all affected employees that servicing and maintenance is required and that the equipment must be shut down and this lockout/tagout procedure implemented.

**Affected Employee(s) Notified**

Jacobs Field Personnel On-Site JHA Personnel  
Project Field Team Lead (as applicable) Blue Tri Star

- 2) Authorized employee(s) shall identify the type and magnitude of the energy that the equipment uses, and shall understand the hazards and the methods to control the energy.

<u>Energy Sources</u>	<u>Magnitude</u>	<u>Hazards</u>	<u>Control methods</u>
<u>Electrical</u>	<u>48-460 V</u>	<u>Electrical shock, arc flash</u>	<u>Disconnect, place lock, verify de-energized with multi-meter</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

- 3) If the equipment is operating, shut it down by the normal stopping procedures listed below.

**Equipment shutdown steps:**

Shut down extraction wells or treatment system by turning the local operator to the "OFF" position at the control panel.  
Following pump shut-down and LOTO

- 4) Locate and operate energy isolating device(s) and tags to isolate the equipment from the energy source(s).

**Energy Isolating Device**

**Location**

Main Lockable Disconnect or Circuit Breaker with Breaker Isolation Device (see page 3) Labeled Pump Panel

**EQUIPMENT-SPECIFIC LOCKOUT/TAGOUT PROCEDURE DEVELOPMENT FORM**

5) Authorized employee(s) shall apply their personal lockout device and tag to each energy isolating device. Lockout devices and tags shall meet the requirements provided in Section 5.5.4 of the Lockout/Tagout SOP 310. When servicing and maintenance activities are to be performed by more than one authorized employee, a primary authorized employee shall be identified and a group lockout/tagout process shall be used that meets the requirements provided in Section 5.5.6 of the Lockout/Tagout SOP 310. Group LOTO devices are listed below.

**Primary Authorized Employee:** Jacobs System Integrator, Facility Operations Personnel **Phone No.:** Varies (list on LOTO tag)

6) Stored or residual energy shall be dissipated or restrained

**Type(s) of stored energy**

**Methods to dissipate or restrain**

Capacitor	Dissipate residual capacitor energy per equipment manufacturer instructions.

7) Authorized employee(s) shall verify that isolation of the equipment has been completed by trying to operate the equipment using normal operating control(s) or by testing to verify that the equipment will not operate. Control(s) shall be returned to the neutral or "off" position after isolations are verified.

**Method(s) used to verify equipment isolation:** Attempt to operate system by turning it on. Tic testers are not permitted.

Use insulated, rated and tested multi-meter to verify absence of voltage and circuit is de-energized. Follow AHA for using multi-meter.

**Sequence of Releasing Lockout/Tagout Control**

- 1) Verify that all personnel in the work area are in a safe position.
- 2) Ensure all nonessential items have been removed and equipment components are operationally intact, including the proper reattachment of all equipment safe guards.
- 3) Verify that the controls are in neutral or "off" position.
- 4) Each lockout device and tag shall be removed from each energy isolating device by the authorized employee who applied the devices. If an authorized employee is unavailable to remove their device, the requirements provided in Section 5.5.5 of the Lockout/Tagout SOP 310, shall be followed.
- 5) All affected employees shall be notified that the lockout devices and tags have been removed before starting the equipment.

**Special Conditions**

Shift or personnel changes made during servicing and maintenance activities shall be coordinated to ensure lockout/tagout protection is always provided, including the orderly transfer of lockout devices and tags between off-going and oncoming authorized employees.

**Method(s) of lockout/tagout control transfer:** N/A no transfer of LOTO controls anticipated

When lockout devices and tags must be temporarily removed from the energy isolating device and the equipment energized to test or reposition the equipment, the following sequence shall be followed:

- 1) Clear equipment of tools and materials and remove all employees from the equipment area.
- 2) Remove only the lockout devices and tags needed to energize the equipment for testing or repositioning.
- 3) Energize and proceed with testing or repositioning.
- 4) Deenergize the equipment and reapply the lockout devices and tags to continue the servicing and maintenance activities.

**Other Requirements:** \_\_\_\_\_

## Reference



**Circuit Breaker Isolation Devices**



**Group Isolation Device For Two Personnel Working on Pumps  
Each Authorized Personnel Working on Equipment Must Place Personal LOTO Lock**

<b>P&amp;PS Electrical Safety</b>	Document No: IB-HS-WI-0344-IB-F-01	<b>Jacobs</b>
<b>Electrical Safety Permit</b>	Project No:	Page: 1 of 2

<b>Date of Validity (DD/MM/YYYY)</b>		<b>Permit No.</b>	
--	--	-------------------	--

1. Personal Details: (to be completed by person performing the task)			
Name		Additional Persons*	1
Company			5
Contact No			5

*\*If additional names required list separately and attach to*

*permit*

2. Permit Type (please tick box etc.)	3. Electrical Work Description
<input type="checkbox"/> Electrical Work Permit	
<input type="checkbox"/> Electrical Access Permit	
<input type="checkbox"/> Isolation/Energisation Request	
<b>Reasons for Access:</b>	

4. Nature of Work
Equipment/System ID:
Location of Work:

5. Additional Information						
SSoW/RA Required	Yes	No				
Proof of Disconnection	Yes	No	Permission for Test	Yes	No	

6. Equipment and Safety Precautions: Putting equipment into safe mode								
	Yes	No	N/A		Yes	No	N/A	
All electrical power sources identified				Other hazardous energies/sources identified				
Sources isolated (Note 1)				Hazards isolated/controlled				
Specify isolation location(s):				Specify how isolated:				

**Note 1 – Compelling reason required if isolation is not possible (give details below)**

7. Safety Preparedness Checklist: (to be completed by person performing the task)								
	Yes	No	N/A		Yes	No	N/A	
ARC Flash type suit Cal rating:				Electrical Safety – Shepherds hook				
Insulated tools				Person trained and authorized				
Warning signs				Familiar with emergency procedure				
Electrically rated safety gloves				Fire extinguisher CO <sub>2</sub> or Halon				
Rubber mat				Safety Observer				
Lockout/tagout equipment				Other permits required				
Protective barriers				Full face visor				

**If either qualified person to whom permit is issued or buddy (where applicable) leave the location all work must cease**

8. Qualified Person & Buddy Signatures	Signature	Date	Time
Authorized Person I certify that I am qualified to carry out the work described above, and that I understand and will follow	Print Name  Signature	/ /	:



<b>P&amp;PS Electrical Safety</b>	Document No: IB-HS-WI-0344-IB-F-01	<b>Jacobs</b>
<b>Electrical Safety Permit</b>	Project No:	Page: 2 of 2

the electrical policy and all safety procedures necessary to complete the job safety.			
Buddy (where applicable) I confirm that my duties as safety observer will be adhered to.	Print Name  Signature	/ /	:
<b>9. Permit Approval</b>			
Authorizing Person Work can commence providing the conditions of the above section are met.	Print Name  Signature	/ /	:
Client Approval (If required) Work can commence providing the conditions of the above section are met.	Print Name  Signature	/ /	:
<b>10. Permit Closure</b>			
Qualified Person (person in charge of work) I confirm that the work for which this permit was issued is <b>Complete</b> [ ] <b>Incomplete</b> [ ] and the are/equipment is in safe condition. All debris and foreign material has been removed from the work area. All persons under mu control have been withdrawn and have been made aware they are no longer approved to work on the equipment.	Print Name  Signature	/ /	:
Authorizing Person This permit is now closed/cancelled and no longer valid.	Print Name  Signature	/ /	:
<b>Note 1 – Compelling reason required if isolation is not possible (give details below):</b>			

# Jacobs Health and Safety Plan

## Attachment 20

### UTV Inspection Evaluation and Inspection Form



## Utility Terrain Vehicle (UTV) Form

Employees who are required to operate the above equipment shall be evaluated and approved as qualified equipment operators by an authorized Operator Evaluation Designated Persons (DP).

This form shall be used by the DP to assess, approve, and document the qualifications of employees who are required to operate UTVs.

Employee (Operator) Name: \_\_\_\_\_

Equipment to be operated: \_\_\_\_\_

### 1. Background Review:

Resume and other documentation (training certificates) shall be reviewed and verified. The individual shall also possess a valid driver's license.

Valid Driver's License. Date \_\_\_/\_\_\_/\_\_\_ DP Initials: \_\_\_\_\_

### 2. Training Evaluation

- a. Employee shall read and understand the manufacture's Equipment Operation Manual for the specific piece of equipment to be operated.
- b. Employee shall read and understand site specific AHAs.
- c. DP shall discuss safe operating practices with the employee.
- d. Employee shall pass the online UTV operator class and exam.

Successfully completed. Date \_\_\_/\_\_\_/\_\_\_ DP Initials: \_\_\_\_\_

### 3. Field Evaluation

#### a. Equipment Awareness, Inspection, and Maintenance

The DP shall observe the employee perform a daily inspection using the provided inspection forms. The employee shall demonstrate the ability to recognize deficient conditions that could affect the safe operation of the equipment. In addition, the operator shall demonstrate awareness of the following:

- Location and function of safety disabling devices (if equipped)
- Location and function of safety devices (fire extinguisher, back-up alarm, stabilizing bars)
- Location of manufacturer warning labels and equipment operation limitations
- Location and function of all gauges, indicators and controls
- Acceptable conditions for passing items during daily inspections
- Periodic maintenance requirements

**b. Equipment Operation**

The DP shall observe the employee operating the equipment through normal maneuvers. The employee shall demonstrate the ability to operate the equipment safely and in accordance with the manufacturer's guidelines.

- Demonstrate ability to safely start equipment in preparation for use (proper start-up sequence followed)
- Understands function and proper appearance of all gauges and indicators
- Understands location and use of all equipment controls
- Checks front, side, rear and above equipment for pedestrians, traffic and obstructions
- Demonstrates smooth and safe equipment travel
- Demonstrates smooth and safe control operations
- Demonstrates normal shut-down procedures
- Demonstrates emergency shut-down procedures
- Demonstrates safe parking and storage of equipment
- Field Evaluation successfully completed. Date \_\_\_/\_\_\_/\_\_\_ DP Initials: \_\_\_\_\_

**Operator Acknowledgement**

I have reviewed and understand all of the information listed above. I also understand that as an operator of this equipment, I am responsible for daily inspections and maintenance as well as the safe and efficient operation of the equipment listed above.

\_\_\_\_\_  
Operator Name                      Signature                      Date

**Qualification Approval**

The employee has completed the UTV operator evaluation process and is qualified to operate the type of equipment identified above.

\_\_\_\_\_  
DP Name                      Signature                      Date