U.S. Department of Agriculture Forest Service	**1. Work Project / Activity** Electric Shop Tools	**2. Location** George Washington & Jefferson National Forests – Southern Region	**3. Unit** All Units of the George Washington and Jefferson National Forests
JOB HAZARD ANALYSIS (JHA)	**4. Name of Analyst** Plinio Beres, Matthew Helt	**5. Job Title** Partnership, Volunteer, Service Program, and Recreation Program	**6. Date Prepared** 11 February 2022

Required Standards and General Notes:	Only qualified and authorized personnel may operate shop equipment.
Required Personal Protective Equipment	Hearing protection, eye protection, gloves as recommended by the JHA and/or manufacturer, long pants, appropriate shoes for task
Tools and Equipment	Examples: First aid kit, table saw, radial arm saw, circular saw, miter saw, band saw, drill press, bench grinder, bench sander, jointer, planer, shaper
Available Training	Planning Projects Workshop, Manufacturer's information for individual motorized equipment.

7. TASKS/PROCEDURES	**8. HAZARDS, POTENTIAL HAZARDS / INJURY SOURCE**	**9. ABATEMENT ACTIONS OR PROCEDURES** **Engineering Controls * Substitution * Administrative Controls * PPE**
Pre-operation inspection.	Injury due to poor condition / lack of inspection of tool.	Inspect these parts prior to operation: ● **Power Cord/Extension Cord/Outlet** – Ensure that cord is the proper gauge for the tool. Refer to owner's manual for specifications. Make sure the cord is not frayed and in good shape. Do not use in wet conditions. ● **Work space** – Ensure that there is adequate space to machine the material without interfering with other shop operations. Make sure that the tool is properly secured and stable (bolted to floor or clamped to sturdy work stand as recommended by the manufacturer). ● **Check On/Off Switch** – Verify on/off switch functions properly. ● **Check for missing/broken parts** – Ensure that all the tool components are in place and in working condition. ● **Check guards/Protective Features** – Check to make sure tool/machine guards and other safety features are in place and in good working order before operating. ● **Cutting/Drilling Edges -** Ensure cutting/drilling tool components are sharp and operable. ● **Check nuts and bolts** – Make sure all nuts, bolts, and other parts, are secure and tight. ● **Worksite** – Inspect worksite and keep it clear of clutter. Make sure there is good footing.

		● **Tag-out all unsafe/unfit/broken tools.** Do NOT use tools which have already been tagged as needing repair. ● **Labels:** Maintain labels and nameplates. These carry important information. If unreadable or missing, contact the manufacturer for a replacement.
Setting up tool for use.	Shock / Electrocution	● Ensure the cords are appropriately rated in watts or amps for the intended use. Do not use underrated cords—replace them with appropriately rated cords which use heavier gauge wires. ● Use ground fault circuit interrupters (**GFCIs**), especially where electrical equipment is used in or around **wet or damp locations**. ● Inspect the cords to make sure that they are fully intact and not damaged, cut, or abraded. Never use frayed or damaged cords. ● Never use multi-receptacle electric boxes that are designed to be securely mounted as extension cords. ● Unless specifically rated for outdoor use, use tools indoors only. ● Never attach ungrounded two-prong adapter plugs to three-prong cords and tools. ● Never use circuit breakers of fuses with the wrong rating for overcurrent protection. ● Check that the on/off switch is in the off position prior to plugging in. ● Unplug cords by grasping the plug, not pulling the cord ● Modified cords or cords without manufacturer's label must be taken out of service. ● Use wood or fiberglass ladders in shop space instead of metal.
	Equipment damage.	● Inspect equipment prior to use. ● Follow manufacturer recommended preventative maintenance. ● Proper operating procedure should be followed. ● Use the correct tool and blade/bit for the job.
	Trip hazard	● Route cords to minimize trip hazards and to protect from insulation damage.
	Explosion	● Do not operate electric tools where flammable vapors or gases are present.
Loading/moving material	Injury due to improper lifting technique and/or misuse of machine.	● Use proper lifting techniques when moving materials to and from the machine. ● If materials are heavy or unwieldy, seek additional help.
Operating tool	Injury to hands	● Most stationary power tools are operated **without** gloves. Therefore, watch the placement of hands relative to the cutting surface. ● Provide push sticks or blocks in several shapes and types. ● Cut green, wet, or other dense material slowly and with extra caution. ● When there is loose debris on the cutting platform, wait until the cutting/drilling has completely stopped before removing the

		material. If the debris is a relatively safe distance from the hazardous cutting area, use a push-stick to knock the material off the cutting platform. Be careful that the push-stick does not come into contact with any moving part of the machine, lest it become a projectile. ● Machines that are operating must be attended at all times. ● Do not touch the drill bit, blade, cutter or the workpiece immediately after operation; they may be very hot and may burn you.
	Cuts, punctures, abrasions	● Wear eye protection rated for the tool being operated. ● Handle blades carefully. ● Do not use cracked, bent, dull, or damaged blades or bits. ● While operating machines: Keep long hair tied up and out of the way; Roll back long sleeves; Tuck in shirts; Do Not wear loose-fitting clothing. ● Be aware of foot placement in relation to the tool. ● Cut away from your body, not towards it. ● Unplug tool when servicing it, changing bits or accessories. ● Inspect motor-driven grinding stones regularly for cracks, ruts, or grooves. Keep stones properly dressed. ● Avoid using wrist in a bent, extended, or twisted position. Take breaks/switch with partner. ● Never overreach when using a power tool. Stay firmly planted on both feet. ● When you start your tool, allow the cutting/drilling component to reach full speed before contacting the workpiece. ● Never use any accessory except those specifically supplied or recommended by the manufacturer. They should be described in the tool's Instruction Manual. ● Never remove the saw from a cut while the blade is rotating. When making a partial cut, or if power is interrupted, release the switch immediately and don't remove the saw from the workpiece until the blade has come to a complete stop.
	Injury to others	● Communicate with and be aware of others. ● Inform others before commencing operation of tool. ● Ensure that others around you are aware of potential danger and are wearing eye protection and/or hearing protection if necessary.
	Hearing loss - noise from tools	● Utilize hearing protection rated for the tool. ● Use appropriate blades or bits for the material to reduce noise. ● Follow manufacturer's instructions.
Materials	Injury from materials	● If cutting/machining previously used materials, check to make sure that there are no foreign objects, such as nails or metal in the materials.

		● Ensure longer materials, which hang over the edge of working surface, are supported (i.e. saw horse, table saw extension, another person, etc.) ● Anchor all material being drilled with a bench press or clamps. Do not hold the work by hand or against your body ● Review safety data sheets (SDS) prior to handling materials. Follow all SDS protocols when handling and/or cutting/drilling into materials. ● Be very cautious of material that is pitchy, knot filled or warped. These are most likely to create pinching conditions and possible kickback. ● Anti-kickback devices may not work when cutting smooth, hard surfaces. Always cut with the smooth, hard surface down, on the table. ● If a method of dust collection is available with the power tool, it should be used to reduce the risk of dust-related hazards. ● Avoid cutting small workpieces that can't be properly secured, and workpieces on which the base of the tool cannot properly rest.
Work area (Shop Space)	Trip/slip on material	● Work area should be kept free of sawdust, scrap, and excess materials. ● Make sure that any objects that were cut are properly disposed of. ● Make sure your work area has plenty of bright, shadow-free light. ● Store materials in an orderly fashion, stacked/stored neatly.
Tool Maintenance	Lack of maintenance	● Develop a maintenance schedule for your tool. Take your tool to be serviced by qualified repair people. ● Maintain accessories carefully. Keep blades and bits sharp and clean. ● When servicing a tool, use only identical replacement parts. Follow instructions regarding maintenance in the tool's operator's manual. Use of unauthorized parts, or failure to follow the maintenance instructions, may create a risk of electric shock or injury. ● Clean and lubricate a tool only as directed in its operator's manuals.
10. OFFICIAL SIGNATURE JOBY TIMM Digitally signed by JOBY TIMM Date: 2022.03.15 17:53:40 -04'00'	**11. TITLE** Forest Supervisor	**12. DATE** 3/15/22

JHA Instructions (References-FSH 6709.11 and .12)

The JHA shall identify the location of the work project or activity, the name of employee(s) involved in the process, the date(s) of acknowledgment, and the name of the appropriate line officer approving the JHA. The line officer acknowledges that employees have read and understand the contents, have received the required training, and are qualified to perform the work project or activity.

Blocks 1, 2, 3, 4, 5, and 6: Self-explanatory.

Block 7: Identify all tasks and procedures associated with the work project or activity that have potential to cause injury or illness to personnel and damage to property or material. Include emergency evacuation procedures (EEP).

Block 8: Identify all known or suspect hazards associated with each respective task/procedure listed in block 7. For example:

- **a. Research past accidents/incidents.**
- **b. Research the Health and Safety Code, FSH 6709.11 or other appropriate literature.**
- **c. Discuss the work project/activity with participants.**
- **d. Observe the work project/activity.**
- **e. A combination of the above.**

Block 9: Identify appropriate actions to reduce or eliminate the hazards identified in block 8. Abatement measures listed below are in the order of the preferred abatement method:

- **a. Engineering Controls (the most desirable method of abatement). For example, ergonomically designed tools, equipment, and furniture.**
- **b. Substitution. For example, switching to high flash point, non-toxic solvents.**
- **c. Administrative Controls. For example, limiting exposure by reducing the work schedule establishing appropriate procedures and practices.**
- **d. PPE (least desirable method of abatement). For example, using hearing protection when working with or close to portable machines (chain saws, rock drills, and portable water pumps).**
- **e. A combination of the above.**

Block 10: The JHA must be reviewed and approved by a line officer. Attach a copy of the JHA as justification for purchase orders when procuring PPE.

Blocks 11 and 12: Self-explanatory.

Emergency Evacuation Instructions (Reference FSH 6709.11)

Work supervisors and crew members are responsible for developing and discussing field emergency evacuation procedures (EEP) and alternatives in the event a person(s) becomes seriously ill or injured at the worksite.

Be prepared to provide the following information:

- **a. Nature of the accident or injury (avoid using victim's name).**
- **b. Type of assistance needed, if any (ground, air, or water evacuation).**
- **c. Location of accident or injury, best access route into the worksite (road name/number), identifiable ground/air landmarks.**
- **d. Radio frequencies.**
- **e. Contact person.**
- **f. Local hazards to ground vehicles or aviation.**
- **g. Weather conditions (wind speed & direction, visibility, temperature).**
- **h. Topography.**
- **i. Number of individuals to be transported.**
- **j. Estimated weight of individuals for air/water evacuation.**

The items listed above serve only as guidelines for the development of emergency evacuation procedures.

JHA and Emergency Evacuation Procedures Acknowledgment

We, the undersigned work leader and crew members, acknowledge participation in the development of this JHA (as applicable) and accompanying emergency evacuation procedures. We have thoroughly discussed and understand the provisions of each of these documents:

SIGNATURE	DATE	SIGNATURE	DATE