

JOB HAZARD ANALYSIS (JHA): Ice Age National Scenic Trail

**Chainsaw Operations: IATR-06**

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**Required Personal Protective Equipment (PPE):** Hard Hat, Leather or other sturdy Work Gloves, 8” High Non-Skid Sole Leather Boots, Eye Protection/Face Shield, Hearing Protection, Saw Chaps, Weather-Appropriate Shirt & Long Pants

\* Swampers also required to wear identified PPE, minus chaps

**Tools and Equipment:** Chainsaw, Saw Kit, Fuel & Bar Oil, First Aid Kit, Cellular Phone or Two-Way Radio

**Required Standards and General Notes:** Chainsaw Operators must have successfully passed saw operator training (Level to be determined by NPS) and be documented as an approved chainsaw operator. Chainsaw operations should always involve two people for safety enhancement. Sawyers and swampers maintain CPR/First Aid training

Sequence of Job Steps	Potential Hazards/ Injury Sources	Safe Action or Procedure
General Chainsaw Operations		
Certification/Training	Various potential injuries due to operating saw outside of skill/training level	Complete approved chainsaw operator training (S-212, etc.); Adult First Aid & CPR certification.
Tailgate Safety Session	Site-Specific Hazards	Identify site-specific hazards associated with each saw operation, mitigate hazards or stop work until safety concerns are addressed.
Fueling	Fire from gas spilled on muffler or other ignition source	Let saw cool before refueling. Fuel on bare ground, use funnels. No smoking during refueling.

Sequence of Job Steps	Potential Hazards/ Injury Sources	Safe Action or Procedure
		<p>Move at least 10 feet away from fueling site before starting saw.</p> <p>Stay 20 feet away from ignition sources when fueling.</p> <p>Replace excessively gas/oil soaked gloves.</p> <p>Read, be familiar with MSDS sheets for fuel/oil.</p> <p>Mix fuel in well ventilated area.</p> <p>Clean up spills promptly.</p> <p>Use labeled containers.</p>
	Chemical burn from spilled gas (eyes, skin)	<p>Wear gloves, eye protection, other PPE.</p> <p>Remove contaminated clothes/gloves; immediately wash exposed areas with soap and water.</p>
Saw Maintenance	Fatigue/injury from improper saw operation	<p>Keep saw sharpened.</p> <p>Keep idle adjusted properly.</p> <p>Inspect for bar wear/proper chain tension.</p>
Sharpening Chain	Cuts to hands	<p>Wear gloves when sharpening chain.</p> <p>Use vise if available.</p> <p>Never file chain while saw is running.</p>
Transporting Saw	Injury due to falls while carrying saw	<p>Always employ chain guard whenever saw is not in operation.</p> <p>Point bar forward when moving downhill, with saw at side.</p> <p>Point bar to rear when moving uphill, with saw at side.</p>

Sequence of Job Steps	Potential Hazards/ Injury Sources	Safe Action or Procedure
General Cutting		
All Sawing Maneuvers	Cuts to body, various reasons	<p>Wear all PPE (chaps, gloves, boots, etc.).</p> <p>Check chain tension periodically to avoid “throwing” chain.</p> <p>Do not operate saw above shoulder-height.</p> <p>Avoid “kickback” by keeping bar tip extended through each cut; ensure saw has a chain brake; maintain firm grip on handle bar.</p>
	Struck on head by falling material	<p>Wear PPE (hardhat, etc).</p> <p>Utilize safety spotter while cutting.</p>
	Struck in eye by debris	Wear PPE (eye protection/face shield).
	Slips, trips, falls	Step over logs, rather than on them; clear area where work is being done of trip hazards (branches, bucked logs, etc.); wear required footwear and other PPE.
	Fatigue	Take frequent breaks.
	Sore or injured muscles, ligaments, etc.	Cut materials to sizes that are easily carried; get help.
	Heat exhaustion/hypothermia	<p>Wear proper clothing for time of year/weather.</p> <p>Dress in layers that can be removed or added to.</p> <p>Take breaks, drink fluids.</p>
	Noise	Wear hearing protection/PPE.
Cutting Under Tension (“binds” or “side winders”)	Struck or crushed by logs/branches springing free from tension	<p>Properly assess binds/pressure before cutting.</p> <p>Utilize “relief” cuts to mitigate tension.</p> <p>Use wedges to avoid pinching saw bar.</p>

Sequence of Job Steps	Potential Hazards/ Injury Sources	Safe Action or Procedure
		<p>Assess for spring poles and rolling logs before making release cuts.</p> <p>Cut on uphill side of log.</p>
Limbing/Bucking	<p>Caught between logs, log and ground, etc.</p>	<p>Walk out the material prior to limbing/bucking—look for hazards.</p> <p>Limb one side of tree first, then the other.</p> <p>Limb from top of large logs.</p> <p>Stay on uphill side when bucking.</p> <p>Use wedges and or pie cuts.</p> <p>Assess all possible binds before cutting.</p> <p>Block material before bucking if potential for it to roll.</p> <p>Do not cross over with saw—limb on same side as saw.</p> <p>Know where tip of bar is at all times.</p>
	<p>Rot on stump affecting holding wood/wedging</p>	<p>Check for soundness with felling axe, listen solid or spongy sound.</p> <p>If needed/possible, bore tree and examine sawdust color/texture for rot.</p>

Sequence of Job Steps	Potential Hazards/ Injury Sources	Safe Action or Procedure
	Struck by weak snags, widow makers, etc.	<p>Look up in the tree for widow makers, conk, slipping bark, and other hazards/indicators.</p> <p>Walk out intended lay.</p> <p>Wear hard hat/PPE.</p>
Felling *Size Up	Wind gust, or misreading lean adversely affecting felling—sit back & loss of control	<p>Determine predominant lean—check head/side lean, wind direction/speed, slope.</p> <p>Use plumb bob to check at least two locations, at right angles.</p> <p>Use correct type/sizes of wedges.</p>
	Tripping due to poor escape route	<p>Establish primary and secondary escape routes at 45 degrees away from tree stump.</p> <p>Walk out both escape routes, and where the tree is to be felled—look for hazards such as snags, down logs, rocks, stumps, low hanging limbs, etc.</p>
Felling *Securing Felling Area	Others being struck by trees/limbs/debris	<p>The faller has the responsibility and authority to identify, secure, and manage the felling area.</p> <p><b>A MINIMUM OF 2-1/2 TIMES THE HEIGHT OF MATERIAL BEING FELLED IN ALL DIRECTIONS MUST BE SECURED.</b></p> <p>No one is allowed inside secured felling area without authorization of the faller.</p> <p>Additionally, the entire downhill side will be included in the secure area on hillsides with steep slopes where material can roll for long, unpredictable distances.</p>

Sequence of Job Steps	Potential Hazards/ Injury Sources	Safe Action or Procedure
		<p>Establish a safe zone outside secured area where everyone remains until felling is completed and the faller signals “all clear.”</p> <p>Appoint one person to maintain communication between the feller and others in safety zone so that nobody enters the secured falling area without permission.</p> <p>Position lookouts on all trails and roads entering the secured felling area.</p> <p>Before leaving the secured felling area, the faller must ensure that no hazards remain such as hang ups, unstable logs, or other dangers.</p> <p>It is the responsibility of the work leader and other volunteer workers to understand and follow these established standards, and to follow the direction of the faller.</p>
<p>Felling *Making Final Cuts</p>	<p>Struck by tree or cut by saw</p>	<p>Make the horizontal cut of the face 1/3 the diameter of the stump.</p> <p>Use gunning site to line up direction of fall.</p> <p>Always match the sloping cut and horizontal cut together—do not cross and create a “Dutchman.”</p> <p>Clean out the undercut.</p> <p>Maintain a minimum 2 inch stump shot (i.e.: make the back cut 2 inches higher than the horizontal cut).</p> <p>Look up as you make all cuts to tree.</p>

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		<p>Use wedges on all back cuts unless the tree has a heavy lean, or the tree is too small to insert wedge.</p> <p>Use adequate felling axe to drive wedge.</p> <p>Always look up each time wedge is driven into tree.</p> <p>Be aware of wind direction &amp; speed.</p> <p>Always leave a minimum of 2 inches of holding wood across the stump (depending upon tree size).</p> <p>Do not cut corner wood.</p> <p>Always give warning shout before starting back cut.</p> <p>Exit using appropriate escape route at first sign tree is committing to the face.</p> <p>Lay down saw clear of stump area &amp; keep moving toward safe area.</p> <p>Get behind large, sound tree if possible.</p> <p>After all material has hit the ground, look up for potential hazards created (broken limbs/tops) that may still fall to the ground.</p> <p>Cautiously move back to the stump after movement has stopped.</p> <p>Faller determines when area is safe, gives the all clear sign.</p>

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		Take opportunity to evaluate/discuss the stump for lessons learned.
Saw Certification & Working within the Felling Area	Other crew members observing felling procedures	<p>Make sure all trainees are aware of which tree is to be felled and what direction it is planned to fall.</p> <p>Point out identified hazards from size up.</p> <p>It is the faller's discretion to allow trainees within the 2-1/2 tree lengths to observe felling, but regardless, maintain safe distance and established escape route.</p> <p>All observers must remain quiet during felling.</p>
Medical Emergencies	Insect stings, allergic reactions, personal injury	<p>Watch for bee nests or swarms while walking, cutting, and after tree is felled.</p> <p>Those with known allergies to bee stings should carry their own sting kit, tell others of their allergy and show others how to use kit.</p> <p>All sawyers &amp; swampers will maintain current First Aid/CPR training, and all saw work will be performed by sawyer/swamper buddy-system teams.</p> <p>First Aid kit on site during all felling operations,</p> <p>Communications to request advanced emergency medical treatment must be provided for (cellular phones/radios, etc.).</p>