

Work Instruction for Clearing and Grubbing



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CONSTRUCTION PROCEDURE

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Revision History

Revision #	Date	Nature of Revision
01	02/19/2016	Document first created.
02	06/18/2018	Update requirements on tree clearing, work around overhead lines, and chainsaw use.

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1.0 PURPOSE

This procedure provides safety guidance while clearing and grubbing.

2.0 SCOPE

Unless specifically noted herein, this procedure shall apply to all Work conducted by/for Renewable Energy Systems Americas Inc., Renewable Energy Systems Canada Inc., or RES Chile S.p.A., and any of their affiliates or subsidiary companies hereafter referred to in this procedure as “RES”.

3.0 REFERENCES

- 3.1 [RASOP 014 - RES Americas Hazardous Flora and Fauna Guidance](#)
- 3.2 [RASWP 001 - Personal Protective Equipment](#)
- 3.3 [RASWP 008 - Safety Program Requirements for Subcontractors](#)
- 3.4 [RASWP 010 - Small Tools and Equipment Safety](#)
- 3.5 [RASWP 013 - Job Hazard Analysis \(JHA\) Procedure](#)
- 3.6 [RASWP 015 - Excavation Safety](#)
- 3.7 [RASWP 027 - Hearing Conservation](#)
- 3.8 [RASWP 033 - Operating Mobile Equipment - General Requirements](#)
- 3.9 [RES Permit to Excavate - 01199-000505](#)

4.0 DEFINITIONS

- 4.1 **Clearing** - The act of cutting and/or removing vegetation.
- 4.2 **Exclusion Zone** - An area where entry is forbidden to unauthorized employees.
- 4.3 **Grubbing** - The act of removing vegetation by the roots.
- 4.4 **Red Tagged** - An Item that has been tagged “Do Not Use” and removed from service due to an operation defect that inhibits the ability to operate it in a safe manner.

5.0 RESPONSIBILITIES

5.1 Supervisor

- 5.1.1 Ensure that only trained and qualified employees operate mobile equipment.
- 5.1.2 Provide documentation of training and/or operator’s qualifications upon request.

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- 5.1.3 Ensure operator has inspected equipment.
- 5.1.4 Ensure that all crew members have been adequately instructed on the content of this work instruction and all pertinent RES procedures.
- 5.1.5 Ensure red-tagged equipment is not used.

5.2 Operator

- 5.2.1 Complete training to inspect and operate mobile equipment and provide documentation of training and experience upon request.
- 5.2.2 Maintain copy of their operator qualification card on their person.
- 5.2.3 Operate mobile equipment in a safe and controlled manner.
- 5.2.4 Inspect equipment prior to use and document inspection on appropriate form.
- 5.2.5 Notify Supervisor of any defects found during inspection.

5.3 Ground Employees

- 5.3.1 Reviewing and complying with the safety precautions outlined in this procedure.

6.0 PROCEDURE

6.1 Permits

- 6.1.1 A Permit to Excavate is required prior to any Clearing and Grubbing work commencing on site. This permit shall be requested from, and issued by, the RES Project Manager or his nominee. The permit shall be task and location specific, and shall have a limited period of use. A new permit shall be required should the existing permit expire prior to the work being completed.
- 6.1.2 RES shall carry out a map search to identify all underground and overhead services in the vicinity of the proposed clearing and grubbing work, and shall call the relevant “dial-before-you-dig” service for the area. The known services identified shall be listed on the permit, and any available relevant drawings attached with the services highlighted.
- 6.1.3 All known services in the vicinity of the proposed Excavation shall be located and marked out using, where necessary, a utility detection device. The employees conducting the work shall then expose the services by hand or other suitable method to confirm depth, type, and location. Suitable support/protection to the services shall be provided if necessary (e.g., sheet piles, hangers).

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6.2 Communication

- 6.2.1 Sufficient two-way radios shall be provided to equipment operators and designated employees on site.
- 6.2.2 If noise produced by clearing and grubbing equipment makes radio communication inadequate, additional communication methods such as air horns shall be used.

6.3 Noise

- 6.3.1 Hearing protection shall be worn by all Company and subcontractor employees in any work areas where the noise level reaches or exceeds 85 decibels.

6.4 Dust

- 6.4.1 Employees shall monitor their activities for excessive dust. When excessive dust is encountered, work activities must be adjusted or dust control methods shall be implemented.

6.5 Mobile Equipment

- 6.5.1 Employees operating mobile equipment shall review and comply with RASWP 033 - Operating Mobile Equipment General Requirements as well as manufacturer's instructions for operating the specific piece of equipment.
- 6.5.2 An exclusion zone shall be established while mobile equipment is in use. The exclusion zone shall be at least two tree lengths of the tallest tree being cleared.
- 6.5.3 Mobile equipment shall be provided with a protected cab to protect the operator from falling limbs, whipping branches, or other debris that become airborne. The protections shall also include an enclosed cab to protect against bee and dust exposure.
- 6.5.4 Where possible, equipment used should have heavy steel plating to protect the undercarriage.

6.6 Wood Chippers

- 6.6.1 Only designated and trained employees shall operate the wood chipper.
- 6.6.2 Employees operating the chipper must review the manufacturer's instructions before the operation begins.
- 6.6.3 An exclusion zone shall be set up around the wood chipper. The exclusion zone shall be a minimum 100 feet around the equipment.

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- 6.6.4 Loose fitting gloves, clothing, and jewelry shall not be worn when operating chippers.
- 6.6.5 Place shorter branches on top of longer branches being fed into the chipper.
- 6.6.6 Never stand, sit, or climb onto any part of the chipper while it is running.
- 6.6.7 Shut down the chipper and remove the ignition key when it is unattended.
- 6.6.8 Before starting a chipper, ensure that the chipper's disc hood is completely closed and latched, and that there are no foreign objects in the infeed area.
- 6.6.9 Ensure that the discharge chute is positioned to prevent chips from hitting employees, equipment, or vehicles.
- 6.6.10 Do not stand in front of the feed table when the chipper is running.
- 6.6.11 Check material to be fed to ensure that it is free of metal and other foreign objects.
- 6.6.12 Use proper locking pins to immobilize the disc cutting wheel when attempting to clear a clogged chipper chute or changing chipper blades.
- 6.6.13 Machine Fed Chippers
 - a) Shall be equipped with a mechanical infeed system.
 - b) Designate one or more employees as a safety watch to be stationed near emergency shut-off devices while other employees feed material into the chipper.
 - c) Stand to the side of the infeed chute when feeding material into the chipper. This reduces the "caught-in" hazard and allows quick access to emergency stop devices.
 - d) Keep hands and feet out of the immediate infeed chute area while the chipper is running.
 - e) Push material into feed rollers with a wooden tool or a long branch.
 - f) Feed branches into the chipper butt-end first.

6.7 Chainsaw Use

- 6.7.1 In addition to minimum PPE requirements, trained employees using chainsaws shall use a full-face shield, chaps, hearing protection, and gauntlet style gloves.

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- 6.7.2 Check controls, chain tension, and all bolts and handles to ensure they are functioning properly and adjusted according to the manufacturer's instructions.
- 6.7.3 Keep hands on the handles and maintain secure footing while operating the chainsaw.
- 6.7.4 Clear the area of obstacles that might interfere with cutting the tree or using the retreat path.
- 6.7.5 Do not cut directly overhead or above shoulder height.
- 6.7.6 Shut off or release throttle prior to retreating.
- 6.7.7 Shut off or engage the chain brake whenever the saw is carried more than 50 feet or across hazardous terrain.
- 6.7.8 The saw shall be shut off prior to hoisting.

6.8 Tree Clearing

- 6.8.1 This scope shall not be performed during adverse weather conditions, unless it is part of the storm and disaster restoration services.
- 6.8.2 When tree clearing adjacent to energized overhead lines, voltage shall be verified, and the following minimum clearance distances shall be observed:

NOMINAL VOLTAGE (PHASE TO PHASE)	MINIMUM REQUIRED CLEARANCE (FEET)
600..... 50,000	10
OVER 50,000.... 75,000	11
OVER 75,000... 125,000	13
OVER 125,000.. 175,000	15
OVER 175,000.. 250,000	17
OVER 250,000.. 370,000	21
OVER 370,000.. 550,000	27
OVER 550,000 1,000,000	42

- 6.8.3 Employees removing tree branches in contact with exposed energized conductors shall be protected with Electrical Protective Equipment and/or insulating devices.

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6.8.4 Ropes used for climbing shall be inspected prior to use.

6.9 Hazardous Flora and Fauna

6.9.1 Employees shall be familiar with poison ivy, poison oak, and poison sumac if it is in the area and how to avoid exposure.

6.9.2 If a threatening animal is observed, employees shall stop work, retreat to a safe distance, and notify their Supervision or RES.

a) This may include capping up the crew (if the animal is mobile, e.g., coyote, bees).

6.9.3 If the animal is less mobile, such as a snake or other reptile, the crews shall clear the area until the animal vacates the area naturally

6.9.4 Under no circumstances shall any employee confront, touch, strike, attempt to move, or kill the animal unless an immediate risk to the employee's life exists. Move away and call your supervisor.

7.0 DELIVERABLES

7.1 RES Excavation Permit

8.0 APPENDICES

8.1 None