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**Procedure for Identification, Removal, and Disposition
of Potentially Contaminated Trees
from Los Alamos National Laboratory Technical Areas**

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Procedure for Identification, Removal, and Disposition of Potentially Contaminated Trees from Los Alamos National Laboratory Technical Areas

1.0 INTRODUCTION

This document establishes the procedure to be followed for the identification, removal, and disposal of trees and other vegetation from potentially contaminated areas (e.g., explosive firing sites, potential release sites [PRSs], and canyons) located in Los Alamos National Laboratory (LANL). This procedure applies to trees identified for removal for various reasons (e.g., as part of the wildfire hazard reduction project; for forest rehabilitation and restoration activities following the Cerro Grande wildfire; etc.). However, prior to any tree thinning, appropriate environmental approvals and documentation must be obtained.

Decisions regarding wood disposal will be made on the basis of historic "process" knowledge, existing or newly collected technical data and information, and the local geomorphology of each site. Subject matter experts from the Environmental Restoration (ER) Program, Environmental Safety and Health (ES&H) Division, Facilities and Waste Operations Division, facility management units, and technical programmatic divisions can be contacted for input into decision-making. The decision process is delineated in Figure 1 and will be discussed later.

Tree thinning operations in known areas of contamination (e.g., PRSs, known contaminated canyon floodplains, etc.) should be avoided or minimized unless they present a threat to laboratory facilities, operations, or personnel. Trees cut in explosive firing sites may contain small quantities of depleted uranium and shards of shrapnel embedded in their surface. Trees growing in canyons and PRSs may contain low levels of radiological or chemical contaminants, which may be present in trees as a result of root uptake and translocation. In each case, past experience has shown that the levels of contaminants are so low as to technically allow unrestricted release to the public. However, to meet the Laboratory's objective of preventing or minimizing the release of any contamination, the Laboratory will take reasonable actions to identify any potentially contaminated trees and other vegetation and keep them on Laboratory property.

This procedure will be finalized, as necessary, as part of the Laboratory's ES&H routine policies and procedures. It is effective immediately, and will remain in effect until superceded or amended.

2.0 PROCEDURE

2.1 Compliance with Regulatory Requirements

It is the policy of the Laboratory to comply with all regulatory requirements relating to worker protection, environment, public health, and disposition of materials from the Laboratory.

2.2 Identification of Potentially Contaminated Trees

A multi-step process is used to distinguish potentially contaminated trees from uncontaminated ones. This process is shown schematically in Figure 1.

2.2.1 Firing Sites

Trees in the vicinity of active or past explosive firing sites (as identified by Dynamic Experimentation Division personnel) shall be treated as potentially contaminated unless sampling and metal detection testing indicate otherwise.

2.2.2 Contaminated Canyons

Trees located in the modern floodplain in Canon de Valle and Mortandad, Los Alamos, Water, Potrillo, and Pueblo Canyons shall be treated as potentially contaminated, unless additional steps are taken as described below.

2.2.2.1 The Use of Sediment Contamination Information for Determining Tree Disposition

Potentially contaminated areas located in these canyons may, if desired, be further segregated by field assessment of canyon sediment. In such cases, ER personnel shall identify potentially contaminated and uncontaminated areas based upon canyon geomorphology and past sediment sampling results. When this is done, ER personnel shall develop maps of the canyon bottom delineating potentially contaminated and uncontaminated areas.

2.2.2.2 Release of Trees and Vegetation Growing in Uncontaminated Sediment

Trees and vegetation located in uncontaminated sediment shall be available for release from LANL property. All other trees and vegetation must be retained unless sampling results indicate otherwise.

3.0 SAMPLING AND ANALYSIS/PROCESS FOR DETERMINING CONTAMINATION DISPOSITION OF INDIVIDUAL AND GROUPS OF TREES

These trees may be sampled and analyzed by the Ecology Group (ESH-20) for appropriate radionuclides and chemical contaminants. Metal detectors may also be used in high explosives testing areas.

Process for Defining "Contaminated"

The following three-step process will be followed for determining whether wood is contaminated through sample analysis:

- i. Is an individual sample value detectable (i.e., the result is greater than 3 x total propagated uncertainty)?
- ii. Is an individual (detectable) sample value greater than the 95% Regional Statistical Reference Level (background mean plus two sigma)?

- iii. Is any particular grouping of onsite sample values (mean) statistically (alpha 005) greater than the background mean?

If answers to numbers i and ii above are "yes" then an individual sample is "contaminated." If all three are answered "yes," then the group of onsite samples can be considered "contaminated."

3.1 Release of Uncontaminated Trees

Tree and vegetation samples that are not contaminated, as defined below, may be released from LANL property. All other trees and vegetation must be retained on LANL property.

4.0 DISPOSITION OF UNRELEASED TREES

Wood originating within the hazard radius of existing or past explosive firing sites shall be burned at permitted facilities. Unless analyzed and found to be free from detectable contamination as defined above, trees cut from potentially contaminated locations in the canyons listed above (item number 2) shall be kept on Laboratory property. They can be burned at permitted sites, chipped in-place, or used for other on-site purposes such as erosion control. Ash resulting from burning may be disposed of through land application methods if all permitting and environmental requirements are met. In all cases, consideration shall be given to preventing the spread of associated contamination.

Trees cut from uncontaminated locations can be released from the Laboratory following established procedures without restriction to their use or disposition.

For questions regarding this procedure, please contact Carey Bare at 505-667-3349 or cbare@lanl.gov

Figure 1: Decision-Making Process for Tree Disposition

