

1 **Urban Forest Strike Team Post-Disaster Rapid Tree Risk Assessment Specification** [1.2<sup>1</sup>]

2 These specifications conform to **ANSI A300 (Part 9)-2017 Tree Risk Assessment; a. Tree Failure** and  
3 have been prepared for Urban Forest Strike Team (UFST) deployments that include natural disasters,  
4 disaster exercises, and training workshops.

5 **Purpose** [1.2.1]

6 These specifications define the context and scope of the UFST post-disaster rapid tree risk assessments  
7 that provide information to communities to support effective mitigation of storm-related tree risk.

8 **Definitions** [Also see 95]

9 Controlling  
10 Authority .....an agency, individual, organization, or corporate entity with the legal authority  
11 and/or obligation to manage individual trees or tree populations.

12 DBH .....Diameter at Breast Height (4.5 feet above ground line) as commonly measured  
13 by arboricultural standards.

14 Facility .....is an improved property; can be a natural feature (improved), or a public feature  
15 including parks (FEMA Category G).

16 Flush cut .....A FEMA debris management term that indicates “the removal of the tree (or  
17 stump) *cut flush* at ground level” (results in the remaining portion of the tree  
18 that is flush or slightly above grade).

19 Improved property.....is property that undergoes regular maintenance (i.e. infrastructure  
20 maintenance, tree and other landscape maintenance, e.g. mowing, brush/weed  
21 control).

22 Mitigation.....activities designed to reduce or eliminate risk to persons or property or to  
23 lessen the actual or potential effects or consequences of an incident.

24 Natural disaster.....a storm event that causes tree damage that affects public risk; may or may not  
25 be a federally or state declared disaster (e.g. ice storm, hurricane, straight line  
26 winds, tornado).

<sup>1</sup> Numbers in brackets on the right-hand side of the page refer to the section in the **ANSI A300 (Part 9)-2017 Tree Risk Assessment a. Tree Failure** approved standard.



- 27 Private tree(s) .....tree(s) growing on privately-owned parcel(s), or on ROWs that are legally
- 28 maintained by the land-owner (may be FEMA Category A).
- 29 Public tree(s) .....tree(s) growing on publicly-owned land and legally maintained by the controlling
- 30 authority (FEMA Category A).
- 31 Residual defect.....A defect that remains after disaster (storm) mitigation activities; may be
- 32 disaster or non-disaster related.
- 33 Risk.....the combination of the likelihood of an event its consequences.
- 34 Stump.....the portion of the tree trunk remaining (usually from 6” to 2’ above ground line,
- 35 but may be longer) after a tree removal; may be in the ground, uprooted, or
- 36 laying on top of the ground
- 37 Target (risk target) .....are people, property (i.e. physical assets), or activities that could be injured,
- 38 damaged, or disrupted by a tree failure.

39 **Organizational context** [92.1, 93.2]

40 Urban Forest Strike Teams (UFST) are self-contained, professional Certified Arborists or urban foresters  
 41 from state forestry agencies, other state and municipal agencies, consulting and commercial  
 42 arboricultural firms, the USDA Forest Service, and other federal agencies that are specifically trained to  
 43 assess risk on storm-damaged trees. These teams are deployed to document trees that meet FEMA  
 44 debris management criteria for Public Assistance reimbursement, assist communities with risk  
 45 mitigation of storm-damaged trees, and retain as many viable trees as possible. The municipality (i.e.  
 46 the controlling authority) has requested UFST assistance with the disaster response/recovery through  
 47 the state forester and <will identify and prioritize><sup>2</sup> / <has identified and prioritized> public property for  
 48 tree risk assessments, and <will work> / <has worked> with the UFST Team Leader to evaluate target  
 49 characteristics (i.e. occupancy) in those priority areas. [92.2]

50 **Professional credentials** [92.1]

51 The UFST team members assessing tree structure and failure potential shall have the title Task Specialist  
 52 and/or Team Leader. They shall have appropriate, post-disaster tree risk training through a hands-on  
 53 UFST Task Specialist or Team Leader training workshop and periodic continuing education via webinar,  
 54 e-Learning, and/or regional and state disaster training scenarios. The UFST Task Specialist shall be

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<sup>2</sup> Team Leader should circle the appropriate phrases.



55 required to have adequate tree risk assessment and Incident Command System (ICS) experience or  
56 training before participating in the UFST Task Specialist or Team Leader training workshop. UFST Team  
57 Leaders shall be Tree Risk Assessment Qualified (TRAQ) by the International Society of Arboriculture.

58 **Tree risk assessment objectives** [93.1]

59 The objective of the Urban Forest Strike Team (UFST) post-disaster rapid tree risk assessment in <name  
60 of municipality/county here> is to identify the risk that storm-damaged trees pose to people and  
61 property on publicly managed land (i.e. parks, rights-of-way, public buildings, etc.) in areas designated  
62 by the controlling authority and to make professional recommendations to mitigate that risk. The risk  
63 assessment and other data collected are provided to assist the controlling authority with prioritization  
64 of the recommended mitigation, and to apply for Public Assistance (PA) under FEMA guidelines based on  
65 “immediate threats”.

66 **Scope of work** [Figure 92]

67 The UFST Task Specialist shall perform tree risk assessments only on those trees specifically identified in  
68 this scope of work. [93.5, 93.6]

69 Tree risk assessments shall be conducted on standing and windthrown trees that:

- 70 ▪ are ≥6” in diameter, **AND**
- 71 ▪ are within the boundaries designated by the controlling authority, **AND**
- 72 ▪ represent a risk or “immediate threat” to **improved**, public property or users of that property,  
73 **AND**
- 74 ▪ that have been damaged by the current natural disaster.

75 And also for stumps that:

- 76 ▪ are the result of the removal of storm damaged trees during disaster response to clear streets  
77 for initial emergency access and response activities.

78 Assessment Protocol [93.4]

79 To help the controlling authority prioritize mitigation efforts, the arborist shall use an **assessment**  
80 **protocol** as described in *Best Management Practices: Tree Risk Assessment* Second Edition (2017,  
81 Smiley, E.T., and N. Matheny, S. Lilly, International Society of Arboriculture, Champaign, IL) that  
82 includes:

- 83 1) identification of the likelihood of failure,

- 84 2) identification of the likelihood of impacting a target,  
85 3) an evaluation of the severity of the associated consequences of the failure.

86 This **rapid tree assessment** shall be made for the tree defect that is eligible for FEMA Public  
87 Assistance reimbursement per FEMA Public Assistance (PA) Program and Policy Guide (FP 104-  
88 009-2, PAPPG v3.1 dated April 2018) and has the appearance of “highest risk”.

89 FEMA eligible defects include:

- 90 ▪ split trunk
- 91 ▪ broken canopy
- 92 ▪ lean >30°
- 93 ▪ uprooted trees (windthrown trees) regardless of root exposure
- 94 ▪ uprooted stumps ≥ 24” at 2’ (unattached) with ≥50% of roots exposed
- 95 ▪ stumps ≥ 6” at 2’ (unattached) regardless of roots exposure
- 96 ▪ stumps laying on top of the ground
- 97 ▪ broken limbs ≥2” diameter at point of break

98 When a tree within this scope (lines 69-77) is not FEMA eligible the storm damage (i.e. defect) that  
99 has the “appearance of highest risk” shall be assessed.

100 In addition, the UFST Task Specialist shall also identify the existence of other “significant” tree  
101 defects (i.e. residual and pre-storm defects) that he/she believes may represent risk after any  
102 recommended disaster (storm) mitigation. Also see **Risk advisories** (line 159). [94.3.3]

103 The timeframe for this post-disaster risk assessment is specified as <one (1) year<sup>3</sup>>, or a length of time  
104 as agreed between the Team Leader and the municipality (i.e. the controlling authority).

105 The UFST Task Specialist shall make mitigation recommendations based on these observations and  
106 timeframe. [93.7]

107 This timeframe and the risk assessment are no longer valid if/when the tree(s) is/are subjected to  
108 another significant storm event (e.g. ice or wind event), significant site changes (e.g. disaster  
109 response/recovery or construction activity, adjacent land cover changes), or post-disaster tree  
110 mitigation/management activity. [94.7.1]

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<sup>3</sup> This timeframe captures four seasons of occupancy and tree biology.

111 **Levels of tree risk assessment** [94]

112 Only one level of risk assessment shall be used by the UFST Task Specialist.

113 **Level 1:** [94.3]

114 For trees on public or private property that have obvious storm damage and fall within the  
115 criteria in the Scope of Work, a Level 1 inspection shall include:

- 116 • a partial or 360-degree ground-based visual inspection on that portion of the tree's  
117 roots, stem, and crown that is easily visible from safe and legal vantage points to  
118 identify broken or damaged limbs, split trunk, damaged canopy, and/or disturbed root  
119 plate from storm damage and other obvious defects associated with risk during disaster  
120 events (e.g. co-dominate stems). [94.3.2]
- 121 • identification of defects on:
  - 122 ▪ publicly-owned trees that could potentially impact targets on improved public  
123 or private property (i.e. the target zone may extend onto private property)
  - 124 ▪ privately-owned trees **ONLY IF** they could potentially impact targets on public  
125 property and mitigation can be accomplished from the public ROW
- 126 • the **assessment protocol** as outlined above in the Scope of Work.

127 Because of the limited ability in viewing all portions of the damaged-tree using Level 1 assessments, risk  
128 ratings may not reflect the actual risk associated with the tree. [94.5]

129 No additional tools shall be required for Level 1 inspections; however, optional tools may be used.

130 The arborist shall not be required to perform a higher level of assessment than what is specified in this  
131 section nor assess trees outside the Scope of Work, but may identify any need for additional inspections  
132 as necessary. [93.5, 93.6, 94.3.3]

133 **Target identification** [94.3.1]

134 Because the Urban Forest Strike Team only assesses storm-damaged trees as outlined in the Scope of  
135 Work above, it is assumed that all trees assessed will have a target. Following Team Leader consultation  
136 with the controlling authority, the UFST Task Specialist shall be instructed in proper determination of  
137 target characteristics including human target occupancy (i.e. rare, occasional, frequent, or constant)  
138 within the likely striking distance of any specified tree or tree part(s).

139 **Risk analysis** [94.6.1]

140 The assessment data shall include the tree species or genus, DBH, latitude and longitude (as USNG),  
141 recommendation regarding eligibility for mitigation reimbursement based on FEMA PAPPG (2018), the  
142 three (3) ISA BMP risk rating components for the defect identified, the calculated ISA BMP risk rating,  
143 other data collected during the assessment, risk mitigation recommendation, and existence of residual  
144 defects following mitigation. The sole purpose of the ISA BMP risk rating and other data is to help the  
145 Task Specialist determine appropriate mitigation recommendations, and help the controlling authority  
146 identify and prioritize the most appropriate post-storm hazard mitigation plan for storm damaged trees  
147 that includes those eligible and not eligible for FEMA debris reimbursement.

148 **Written report** [94.6.2.1]

149 A written report shall be provided by the UFST Team Leader to the controlling authority that will include  
150 a description of the methods used, identification and location of each tree inspected within the scope of  
151 work, a recommendation regarding eligibility for mitigation reimbursement based on FEMA PAPPG  
152 (2018), the tree risk assessment components which includes the tree part assessed for likely failure, the  
153 risk rating based on that component data, all other data collected for the assessment, risk mitigation  
154 recommendation(s), and indication of residual defect(s). In addition, a FEMA Public Assistance  
155 mitigation list (and corresponding map) will be generated that includes: genus/species, diameter, and  
156 location (i.e. US National Grid (USNG) and latitude/longitude in decimal degrees) of each tree inspected  
157 within the Scope of Work with recommendations regarding eligibility for mitigation reimbursement  
158 based on FEMA PAPPG (2018).

159 **Risk advisories** [94.6.2.1.1]

160 Regardless of the storm damage mitigation recommended or taken (except removal), some residual tree  
161 risk will remain following mitigation. Only when the tree is removed will all potential structure and  
162 stability concerns associated with the tree be eliminated; however, remaining flush cut stumps may still  
163 pose a risk in some communities.

164 Because this deployment and subsequent tree risk assessments are related to a recent natural disaster  
165 and some storm-related damage may not be immediately apparent at the time of our deployment, the

166 controlling authority should include follow-up inspections as part of the mitigation plan for all trees  
167 within the areas designated in this specification. [94.7.1]

168 **Owner determination** [94.7.1]

169 It shall be the responsibility of the controlling authority to schedule additional inspections as  
170 recommended by UFST, determine other actions needed, and implement mitigation recommendations.

171 **Primary contacts**

172 Controlling Authority: \_\_\_\_\_ City of \_\_\_\_\_  
173 <Typed or printed name> Title: \_\_\_\_\_  
174 Mobile: \_\_\_ - \_\_\_ - \_\_\_ e-Mail: \_\_\_\_\_

175 Urban Forest Strike Team: \_\_\_\_\_ Team Leader  
176 <Typed or printed name> Agency: \_\_\_\_\_  
177 Mobile: \_\_\_ - \_\_\_ - \_\_\_ e-Mail: \_\_\_\_\_

178 **Literature cited** (LINKS AS OF SEPTEMBER 20, 2018)

179 ANSI A300 (Part 9)-2017 Tree Risk Assessment; a. Tree Failure, Tree Care Industry Association, Inc., Londonderry,  
180 NH

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182 Best Management Practices: Tree Risk Assessment Second Edition (2017), Smiley, E.T., and N. Matheny,  
183 S. Lilly, International Society of Arboriculture, Champaign, IL

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185 Tree Risk Assessment - Manual Second Edition (2017), Dunster, J. and E.T. Smiley, N. Matheny, and S.  
186 Lilly, International Society of Arboriculture, Champaign, IL (i.e. TRAQ)

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188 FEMA Public Assistance Program and Policy Guide FP 104-009-2 PAPPG v3.1 / April 2018

189 <https://www.fema.gov/media-library/assets/documents/111781>

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