Urban Forestry Associates, Inc. *July 23, 2025*

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Proposal for Tree Failure Risk Assessment

PROPOSAL:

Ray Moritz, Senior Urban Forestry Consultant for Urban Forestry Associates (UFA), was contacted by Georgia Woods, General Manager of the Bolinas Community Public Utility District and George Krakauer, Bolinas Fire Protection District Fire Chief to inspect several forested roadside sites along Lower Mesa Road and Olema-Bolinas Road for potential risks to travel, emergency access/egress, utility disruption, vehicle and utility caused wildfire ignition potential, associated tree failures. Ray Moritz is a 1995 SAF Certified Forester #241, 2011 NW ISA Certified Tree Risk and 2015 ISA Tree Risk Assessor Qualified (TRAQ).

SITES:

1. Forested areas of Olema-Bolinas Road north and south of Mesa Road on both designated public and Private properties (See Figure 1 - Bolinas Fire Department Map, cropped for use in this proposal).
2. East Mesa Road BCPUD eucalyptus grove (See Figures 1 & 2)

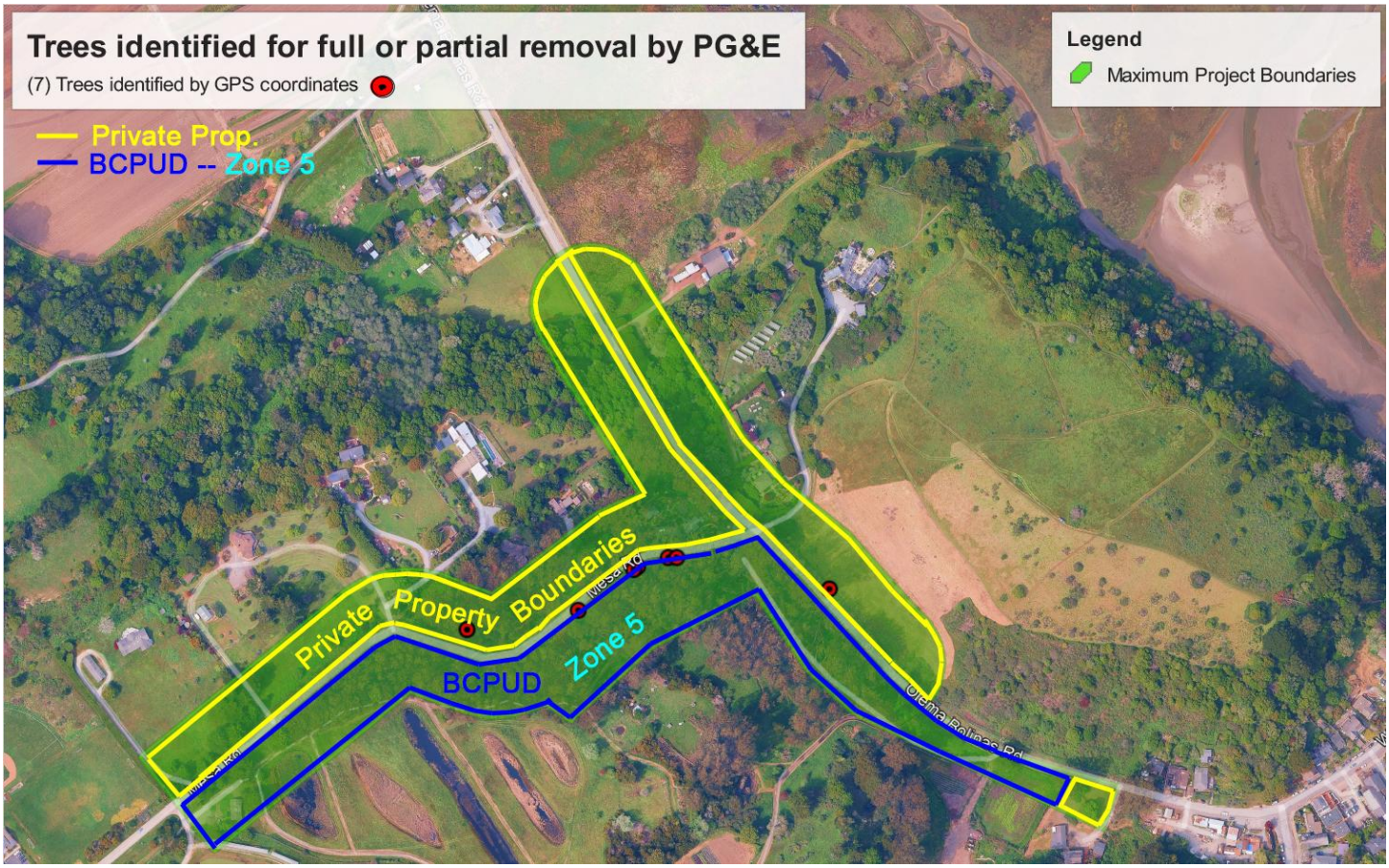

Figure 1 – No trees located more than 100 feet from the paved travel lane edge will be assessed.

Figure 2 – This figure includes the roadway assessment limits. No trees, or targets (trails or roadways) will be assessed outside these limits.

TREE RISK ASSESSMENT:

Risk assessment is the analysis of the likelihood of a failure event and the severity of potential consequences. Tree risk assessment combines the likelihood of a tree failure and impacting a target with the severity of its associated consequences (personal injury, property damage, or disruption of activities). All trees or tree parts have some level of risk is they are likely to impact a target of significant value. Where there is no target of significant value, there is no risk. The level of risk aversion of the tree owner or property manager determines what action, if any, is taken. The manager also decides what trees are to be assessed and the level of assessment. The role tree risk assessor is to identify, analyze and evaluate tree risk, and recommend mitigation or abatement practices. Recommendations may also include target management practices.

Levels of Risk Assessment (as defined by the ANSI A300 Standards for Tree Care Operations)

- Level 1 - Limited Visual: A limited visual risk assessment is sometimes referred to as a *walk by* or a *drive by* assessment. It is most common in urban forest scenarios where trees are abundant and resources for inspection are relatively scarce. A limited visual is not necessarily a complete 360-degree inspection and may be employed in situations where access is limited. Professionals conducting a limited visual assessment identify high-risk trees that are mitigation priorities. This level of assessment is the most common level used by cities, government agencies and large forested property owners. This level assessment may include recommendations for higher assessment levels for specific trees.
- Level 2 – Basic Visual: A basic visual assessment is a 360-degree inspection from the ground that is more thorough and typically includes height and diameter measurements. An assessor may use binoculars for crown inspections, a mallet for sounding hollows, a probe for inspecting cavities, and other common tools to conduct the inspection. This is the most common level used on residential properties.

- Level 3 – Advance Assessment: An advanced assessment can be an aerial assessment or an assessment that includes quantitative decay detection, health evaluation, wind load assessment, and static load assessment. Given the more advanced tools and methodologies employed, this service is often offered at a premium to the customer and typically reserved for heritage or high value trees.

The recommended level for this assessment was a Level 1 inspection, but in practice a Level 2 inspections are performed on trees with serious defects targeting sites with moderate or frequent occupancy, potentially medium to high impacts, with potentially significant to severe consequences. (See Figure below)

Target Occupancy Rates:

1. Constant: Target(s) is or are constantly present or a steady stream of mobile targets in the target zone.
2. Frequent: A target that is occupied during a large portion of the day or week. A target zone with moderate volumes of traffic such as a suburban street, playgrounds or sidewalks in shopping areas.
3. Occasional: Sites infrequently occupied by targets of value, such as country roads, low-use foot paths, or low-use sections of parks.
4. Rare: Rarely used trails or roads, remote areas of parks, areas with low mobile occupancy resident time for only part of the day, such as a low-use trail or country road with virtually no use at night.

Risk Categorization

Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood												Consequences				Risk rating of part (from Matrix 2)
							Failure				Impact				Failure & Impact (from Matrix 1)								
							Improbable	Possible	Probable	Imminent	Very low	Low	Medium	High	Unlikely	Somewhat	Likely	Very likely	Negligible	Minor	Significant	Severe	
1																							
2																							
3																							
4																							

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Target Occupancy rates:

1. 70 Mesa Road to Olema Bolinas Road and from the south end of 73 to the south extent of 16 Olema Bolinas Road: Frequent use by mobile targets with partially protected people. Occasional use by pedestrians during the day, rare use by pedestrians and occasional to rare use late night to early morning by mobile targets with partially protected people.
2. "Zone 5" east Mesa and south Olema Bolinas Roads Eucalyptus Grove.

Disruption of Activities:

1. Travel along east Mesa Road, from 70 Mesa Road to Olema Bolinas Road: Highly Significant disruption.
2. Olema Bolinas Road from Mesa from 73 to 16 Olema Bolinas Road: Highly Significant disruption.
3. Emergency access/egress: Highly significant disruption and delays.

LEVEL ONE RISK ASSESSMENT – walking visual ISA TRAQ assessment

1. East Mesa Road / Olema-Bolinas Road /target interface
2. Tag high risk (hazard) trees with a target(s) of value, trees with high risk to interrupt activity (emergency access/egress, etc.) and high risk of causing a wildfire ignition.
3. Provide a comprehensive report addressing all assessed trees equal to or greater than 18" Diameter Breast Height (DBH = 4.5 ft. above grade). It is estimated that between 800 and 1,000 trees will be assessed.
4. Other trees less than 18" DBH that pose an imminent risk may be assessed, particularly when they pose and unexpectable risk to people, travel, and utilities, or domino effect involving other tree failures.

TREE FIELD DATA SHALL INCLUDE:

Species: Common name (genus and *specific epithet*)
Locations: GPS location and geo-tagged photographs entered onto Google Earth
Condition: Structural Failure potential (tree or tree parts with high likelihood of impacting specified targets)
Target: Vehicles and their passengers, travel ways, Utilities, and/or activities.
Conclusion: Failure risk to people, property, activities, utilities and wildfire ignition.
Recommendation: Safety prune[1], remove or recommendation for a Level 2 or Level 3 risk assessment.

[1] "Safety Pruning" may include crown reduction, branch reduction, thinning, or branch removal.

PROJECT FIXED ESTIMATE (3 LINE ITEMS):

#1) Tree assessments along/within BCPUD property boundary (blue line)	$10,680.00
#2) Tree assessments along/within Private property boundaries (yellow lines)	$16,020.00
#3) Analysis and Report Preparation	$ 4,500.00
	$31,200.00

SCOPE OF WORK AND LIMITATIONS

All observations regarding trees in this report shall be made by UFA, independently, based on our education and experience. All determinations of health condition, structural condition, or hazard potential of a tree or trees at issue are based on our best professional judgment. The health and hazard assessments in this report are limited by the visual nature of the assessment. Defects may be obscured by soil, brush, vines, aerial foliage, branches, multiple trunks or other trees. Even structurally sound, healthy trees are wind thrown during severe storms or fail due to other weather conditions. Consequently, the conclusion that a tree does not require corrective surgery, or removal is not a guarantee of no risk, hazard, or sound health.

Information regarding property boundaries, landownership, and tree ownership shall be provided by the client.

TREE WORK STANDARDS AND QUALIFICATION

All tree work, removal, pruning, planting, should be performed according to industry standards as established by the International Society of Arboriculture best management practices, and applicable ANSI 300 standards. Contractors must have a State of California Contractors License for Tree Service (C61-D49) with general liability, professional liability, worker's compensation, and commercial auto/equipment insurance.

Contractor standards of workmanship shall adhere to current Best Management Practices (where possible) of the International Society of Arboriculture (ISA) and the American National Standards Institute (ANSI) for tree pruning, fertilization and safety (ANSI A300 and Z133.1). Safety is the primary goal.

Ray Moritz, 1995 SAF Certified Forester #241
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2015 ISA Tree Risk Assessment Qualified