URBAN FORESTRY ASSOCIATES, INC.
8 Willow Street San Rafael, CA 94901
(415) 454-4212 info@urbanforestryassociates.com

ARBORIST REPORT

For

The Meadow Club- 1001 Bolinas Road, Fairfax, CA 94930

PURPOSE

Urban Forestry Associates (UFA) was hired to assess the health, stability and risk of the number 1Tee Italian Stone Pine tree on the Meadow Club property at the request of David Sexton. I inspected and conducted a risk assessment of the subject tree on February 19th, 2019 at 4:00 pm.

SCOPE OF WORK AND LIMITATIONS

Urban Forestry Associates has no personal or monetary interest in the outcome of this investigation. All observations regarding trees in this report were 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, a conclusion that a tree does not require corrective surgery or removal is not a guarantee of no risk, hazard, or sound health.

SPECIES CHARACTERISTICS

Italian Stone Pine / Umbrella Pine, *Pinus pinea* WCISA group #4 class coast #2, inland #2

Italian Stone Pine is considered to be a moderate growing and long-lived tree that can grow to a height of 65' or more. Optimum sites (adequate growing space, soil moisture/nutrients, sun, etc.) species can grow up to 100' with a crown spread of 35-45'. During the juvenile stage, the tree grows as a stout, bushy globe; in mid-life, the tree develops a thick trunk with “umbrella” of many branches. In maturity, the tree is broad and flat topped.” (Western Gardens, 1999).

Species Traits

Italian Stone Pine / Umbrella Pine, *Pinus pinea*

Italian Stone Pine is considered to be a moderate growing and long-lived tree that can grow to a height of 65' or more in a stout bushy globe shape. It is considered too large for small garden areas. This species tends to have massive trunks and branches, and to fork close to the ground. Optimum sites (adequate growing space, soil moisture/nutrients, sun, etc.) species can grow up to 100' with a crown spread of 35-45'. During the juvenile stage, the tree grows as a stout, bushy globe; in mid-life, the tree develops a thick trunk with “umbrella” of many branches. In maturity, the tree is broad and flat topped.” (Western Gardens, 1999). Texts warn that it “...should be grown with a single leader;” and “...prevent included bark from forming...” (Gilman, Trees for Urban and Suburban Landscapes).

Excerpt from Gilman, E.F. 1997. Trees for Urban and Suburban Landscape. Delamar Publishers. Albany, NY.

Italian Stone Pine (*Pinus pinea)*
Height: 35 to 65 feet

Width: 35 to 45 feet
Fruit: oval; dry; brown; edible; causes some litter; persistent; showy
Growth Rate: moderate; long-lived
Habit: rounded, spreading; dense; symmetrical; fine texture
Light Requirements: grows best in full sun
Soil Tolerances: all texture; slightly alkaline to acidic; slat and drought
Pest Problems: resistant
Pruning Requirements: needs some pruning to develop strong structure **with one leader to prevent included bark** from forming by eliminating or pruning young branches with narrow crotches; pruning January through October increases susceptibility to bark beetle, gall rust, and pitch canker.
Limb Breakage: susceptible to breakage from included bark, storm down blasts, ice or snow loads

Water Requirements: Little water
Climactic Zones: Sunset Zones 8, 9, 11-24; H1

OBSERVATIONS

Tree # 1:

Species: *Pinus Pinea* (Italian Stone Pine) WC ISA Appraisal Class 2 Group 4
Size: Two sparred, 38.5" and 43" DBH
Location: South side of 1st tee at the top of a steep slope on the edge of an irrigated tee area.
History: My 2009 report on this tree stated: *"Note that stone pines should be pruned and trained when they are young to develop a single leader. This tree has a narrow and weak attachment at the forked location, which may in the future require cabling in order to prevent entire limb/leader failure."* Over the decade since then this tree has been repeatedly safety pruned and multiple cables were installed to support the massive trunks and limbs attached by the main, defective, acute angle crotch.

In 2013 I wrote a report on the four Stone Pines stating they had: "*Fair health, poor structural condition. Typical of the nature of this species, the pines have developed acute angle crotches.*

These trees present hazards that must be abated or significantly mitigated. The Club intends to remove the three stone pine trees adjacent to the cart path and to preserve the highest tree shading the bench adjacent to the First tee. All four trees here are Italian Stone Pines and the weak acute angle crotches with poor attachments are a species characteristic exacerbated by age and the great mass of those spars.

The tree to be preserved has a number of structural defects that are both inherent to the species and particular to this tree. The structural defects should be mitigated prior to any decision to retain the tree indefinitely. On the retained tree, trim to reduce the end weight of major scaffold limbs and branches to reduce the stress on acute angle crotches. (Within each spar there are branches of about 6" in diameter that may be thinned out.) Also, for increased stability, remove the lowest horizontal limb that extends to the east and cable the remaining two major stems together."

The Meadow Club engaged a tree service to do the safety pruning and install an improved cabling system. One nail was installed in each trunk above the main crotch and the gap was measured for the purpose of monitoring the integrity of the crotch.

David Sexton checked the measured main crotch gap and contacted UFA on February 12th 2019 to arrange an inspection of the tree because the gap had widened potentially indicating the beginning of structural failure.

2019 Condition: Overall fair health but hazardous structural condition. Our inspection found that a deep crack had formed in the southwest side of the main crotch and butt section down to the soil line (See Figure 1). One cable has broken, one has loosened, while the third cable has tightened (See Figure 2).

2019 Conclusions: The widening of the main crotch gap and the crack indicates the failure of the main crotch. The loosening of the failure of one cable, the loosening of a second cable, and the tightening of the third cable indicates that the northeast trunk and canopy is twisting. The fact that the crack first appeared on the SW side of the butt also supports torque failure. The only thing preventing total failure is the one remaining cable and given the failure of one cable, that support is highly questionable. The failure or removal of the NE trunk and canopy will further destabilize the southwest trunk and canopy. Therefore the entire tree should be removed in a single operation. No permit is required because the Stone Pine is not a County "protected tree". **This tree is an imminent risk to people.**

Targets: The failure targets the tee area and the golfers using it.

Recommendation: Remove the entire tree as soon as possible.

Figure 1: Fracture crack extending down from main crotch to the butt section base.

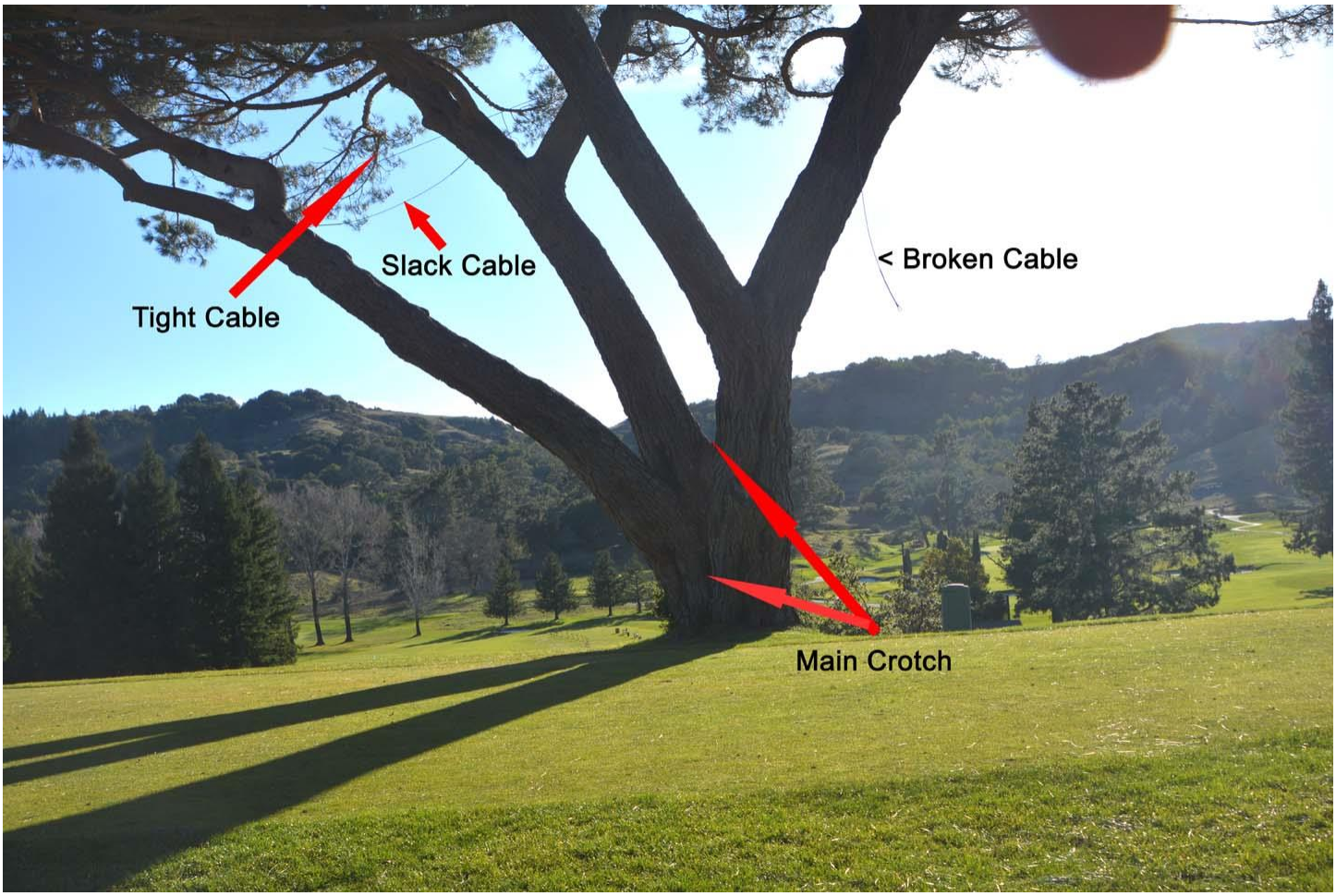


Figure 2 – The northeast trunk and canopy is twisting and failing toward the #1 Tee. It is a high risk of failure

Risk and Tree Preservation

I have been asked by the Meadow Club managers to determine whether there is any possible alternative to save the subject tree. The TRAQ Tree Risk Assessors are not charged with the decisions as to whether trees shall be removed or not. Assessors only have a duty to inform managers of the level of failure risk a tree has to impact a target of value (people and property). To reach a conclusion about the level of risk the assessor determines the likelihood of failure (in this case the tree is in the process of failure), the likelihood that there is a target that will be impacted by failure (in this case the #1 Tee and golfers on the tee) and the level of impact to the target of failure (in this case massive limbs and trunks). In addition to identifying the structural defects of the subject tree, I also considered the failure history of the tree. The weight and movement of the tree has broken cables in the past. In spite of safety pruning (unweighting of the limbs) and re-cabling, it has again failed in the present.

Our study of the biomechanics of trees teaches us that when a tree is extensively cabled, the load exercised on the tree by weight and wind is transferred from dispersed locations throughout the canopy to the tree base and roots. The base is fractured and the subject tree has far from an ideal root environment. It is a “summer-dry” species in a summer wet situation which is unhealthy for its roots. Plus it has a steep slope on the opposite side of the tree from the tee area which is not good for the development of tension roots.

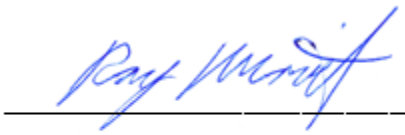
Through bolting of the butt and re-cabling of the major trunks and limbs increases the risk of whole tree failure. My conclusion is that the residual level of risk would be too high in spite of such measures and that the tree should be removed. The only viable alternative to reduce the high risk is to move the #1 Tee out of the target zone and fence off the target area around the tree.

SCOPE OF WORK / LIMITATIONS

Information regarding property boundaries, land ownership, and tree ownership was evident from property fencing and/or provided by the client. UFA has no personal or monetary interest in the outcome of this matter. All determinations reflected in this report are objective and to the best of our ability. All observations regarding the sites and trees were made by UFA personnel, independently, based on our education and experience. Determinations of the health and hazard potential of the subject trees are through visual inspection only and of our best professional judgment.

TREE WORK STANDARDS AND QUALIFICATION

All tree work, removal, pruning, planting, shall be performed using industry standards as established by the International Society of Arboriculture. Contractor must have a State of California Contractors License for Tree Service (C61-D49) or Landscaping (C-27) with general liability, worker's compensation, and commercial auto/equipment insurance. Workmanship shall adhere to current ISA Best Management Practices.



Ray Moritz, Urban Forester SAF Cert #241