

MACNAIR
&
ASSOCIATES
CONSULTING ARBORISTS AND HORTICULTURISTS



August 24, 2023

Michelle Zyromski, Esq.
Zyromski Konicek, LLP
613 Fourth Street, Suite 203
Santa Rosa, CA 95404

RE: Salvation Army Bunya Pine Tree Risk Assessment

Dear Ms. Zyromski:

This report is a tree risk assessment of a mature bunya pine (*Araucaria bidwillii*) growing at the intersection of Second Street and Pierce Street (1080 Second Street). A site visit was completed on 8/23/23 to document the health and structural condition of the tree. Site conditions were also evaluated as part of the risk assignment.

The risk assessment is a visual assessment of the health and structural condition of the tree from the ground level (¹Level 2 Basic Assessment). Tree observations included a visual evaluation of the lower trunk, mid and upper tree crown, foliage vigor and density, observable structural defects, and any other indicator of internal decay.

Documents Reviewed:

Sanford Tree Service Report On Hazard of the Bunya Pine (3/30/22)

Tree Permit Removal Application (8/31/22)

Vintage Tree Care Arborist Report (Fred Frey) (2/5/23)

City of Santa Rosa Denial Letter (3/3/23)

Sharon King (Property Manager) Tree Removal Summary List (8/11/23)

Historical documents dating back to 1985, including various tree removal requests, newspaper articles documenting the tree danger, and history of property damage and injury.

¹ Smiley, E.T., Matheny, N.P., Lily, S. 2017. *Tree Risk Assessment Best Management Practices (Second Edition)*. International Society of Arboriculture, Champagne, Illinois.

TREE OBSERVATIONS/DISCUSSION:

The subject bunya pine is a mature tree with a 66-inch trunk diameter (measured at 4.5 feet) and a 115–120-foot height. The crown spread is 26 feet to the northeast, 18 feet to the northwest, and 20 feet to the southwest. The tree has a single dominant trunk with three secondary trunks forming in the upper crown. The tree is healthy, with normal vigor and foliage density, and no significant pest or disease issues observed.

This Australian tree species is characterized by its large stature (up to 160 feet) and branches produced in whorls with unique small and sharp leaves rotated along the branch. It is also known for producing male and female cones, which can be the size of a football and weigh up to 24 lbs. The female cones are typically produced at two-to-three-year intervals and form at the terminal ends of the branches. Because of the cone weight, the trees are considered highly hazardous when the cones are present with injury and deaths documented in online references.

When growing in public areas, the management recommendation is to create an exclusion zone around the tree to prevent injury and property damage or to physically remove the cones, which, because of the tree's height, requires a high lift and climbers in the tree (a labor-intensive task).

The primary risk with the subject tree is the dangerous cones and the likelihood of severe injury to pedestrians using the sidewalk adjacent to the tree or working in the Salvation Army resident garden below the tree. The three secondary trunk structure in the upper crown is also potentially a significant structural defect. Still, as the Frey and Sanborn reports note, it can likely be mitigated with a cable installation and pruning. The final issue is the risk of branch failure and the sharp leaves capable of moderate injury. Branch failures are common with this species, as shown in the images provided in this report.

The Frey report provides an opinion that the risk rating for the upper crown multiple trunks is low based on risk assessment methodology. While I agree with his assessment of the multiple trunks, the report does not discuss the cone hazard and the severe consequences (severe injury or death) if a cone strikes a pedestrian. While on-site for the tree evaluation, I counted five pedestrians walking below the tree in 45 minutes.

TREE RISK ASSESSMENT METHODOLOGY:

The assessment methodology is based upon the ANSI A300 (Part 9)-2017 Tree Risk Assessment a. Tree Structure Assessment and the 2017 International Society of Arboriculture Best Management Practices (BMP) booklet Tree Risk Assessment (Second Edition). The methodology establishes a systematic process for identifying structural defects and their associated risk. Risk is defined in the BMP publication as "the combination of the likelihood of an event and the severity of the potential consequences."

The current evaluation is a Level 2: Basic Assessment as described in the Best Management Practices publication. This assessment level is a visual inspection of the individual trees with no advanced diagnostic procedures performed. Advanced diagnostic procedures are the next level of assessment and would include root collar excavation and inspection, aerial inspections, and additional decay evaluations.

The likelihood and the severity of the consequences are categorized or quantified to establish a level (magnitude) of risk compared to the tree owner's tolerance for risk. Critical to the assessment is identifying risk targets defined as the property, activity, or people that would be damaged, impacted, or injured by a tree failure.

The final risk rating for a tree is a compilation of risk factors, which are listed as follows:

1. Primary Target Area
2. Tree Part(s) Most Likely to Fail:
3. Likelihood of Failure (Four Categories)
4. Likelihood of Impacting Target
5. Combined Likelihood of Tree Failure Impacting a Target 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

6. Consequences of Failure:
 - 6.1. Negligible- Low-value property damage or minor disruption (i.e., traffic) with no personal injury risk.
 - 6.2. Minor- Low to moderate property damage, small disruptions, or minor injury risk.
 - 6.3. Significant- Moderate to high property damage, considerable disruption, personal injury. Disruption of distribution primary voltage power lines.
 - 6.4. Severe- Serious personal injury or death, damage to high-value property, and serious traffic or electrical disruptions.
7. The risk-rating matrix shows the level of risk as a combination of the likelihood of failure and impact and the severity of the failure consequences.

Likelihood of Failure and 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

SUMMARY OF RISK RATING FOR THE BUNYA PINE:

Likelihood of Failure (Over the Three-Year Period):

The likelihood of cones dropping from the tree is rated as Probable.

Likelihood of Impact:

The likelihood of impact on people in the areas near the tree in the event of failure is Medium to High, depending on the actual occupancy rate during the cone production season.

Likelihood Matrix (Combined Likelihoods of Failure and Impact)

The combined likelihood of failure and impact to people in the tree areas during the projected three-year period is rated as Somewhat Likely to High, depending on the cone crop size.

Consequences of Failure:

The consequence of a tree part (cone) impacting a person is rated as Severe due to the potential for serious injury or death.

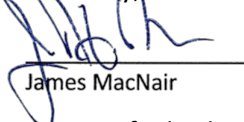
Risk Rating:

Based on this analysis, the risk rating of the tree is moderate to high. It should be noted that a moderate risk is significant and should be carefully considered relative to the risk tolerance of the tree owner and the people exposed to the risk.

The risks of upper crown trunk failure and branch failure are not detailed in this report but are likely low.

Please contact me with any questions or if additional information is required.

Sincerely,



James MacNair

ISA Certified Arborist WE-0603A
ISA Tree Risk Assessor Qualified
ASCA Tree and Plant Appraisal Qualified

Disclaimer:

Unless expressed otherwise, the information in this report covers only those items that were examined and reflected the condition of those items at the time of inspection. The inspection is limited to visually examining accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the trees in question may not arise in the future.

Tree Images:



The view of the tree from the north and its location adjacent to the sidewalk, resident garden, street parking, and garden driveway.



The view of the three secondary trunks formed in the upper crown. This multiple-trunk structure is considered a potential defect.



A close-up view of the secondary trunk union and a partially failed branch (arrow) that is a common issue for this species.



A pedestrian is walking below the tree on Second Street. Five pedestrians were observed walking on this section of sidewalk in 45 minutes.



The sharp leaves of the tree constantly drop.



The extended branches have the characteristic leaf whorl at the end of the branches.



The Bunya pine in Railroad Square with arrows indicating broken branches. The parking lot, sidewalk, and park bench are located beyond the crown edge, reducing the risk of impact from branches and cones.



Web image showing the size of the female cone.

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FIRM QUALIFICATIONS

MacNair and Associates is a professional arboricultural and horticultural consulting firm providing a complete range of landscape management and evaluative services. Clients include landscape architects, attorneys, corporations, government agencies, property managers, and professions within the construction industries.

MacNair and Associates and its predecessor, Horticultural Technical Services, have completed over 2500 projects throughout the Western United States with services ranging from expert witness testimony to specialized landscape management manuals and vegetation studies. MacNair and Associates is known for providing accurate and practical recommendations supported by site-specific technical data and clearly written documentation.

James MacNair, Principal

James MacNair is a consulting arborist and horticulturist (International Society of Arboriculture Certified Arborist WE-0603A, American Society of Consulting Arborist Tree and Plant Appraisal Qualification, and ISA Tree Risk Assessor Qualification.)

Professional experience in the horticultural industry began in 1973 and includes work as a production manager of a viticulture nursery and as owner and vice-president of Skylark Wholesale Nursery. Skylark Nursery was recognized for the introduction and promotion of Mediterranean and California native plants. Mr. MacNair's extensive knowledge of landscape ornamentals has resulted in lectures and articles discussing their appropriate use and care in the landscape.

Mr. MacNair was a regular guest speaker at water conservation conferences throughout the state in the 1980s and has lectured at various colleges and universities. He received a recognition award for exemplary effort in the promotion and implementation of Xeriscape water conservation in the urban landscape.

From 1984 to 1990, James MacNair was a principal partner of Horticultural Technical Services and since 1990 is the principal of MacNair and Associates. Areas of specialization include arboricultural evaluations and risk assessments, expert witness services, tree loss appraisals, landscape planning for sites with special soil or water chemistry problems, irrigation strategies and plant selection for sites using reclaimed water, and irrigation management techniques including the development of computer scheduling software.

From 1991 through 1997, James MacNair was a principal of Irrigation Management Group (IMG), developers of the water conservation software ET Calc™. Mr. MacNair served as a software designer, technical writer, and irrigation management consultant.

In 2010, Mr. MacNair developed the tree/plant appraisal software TreeValue™ for use in the 2007 San Diego County fire litigation cases. He was the lead arborist expert for San Diego Fire Lawyers and supervised the evaluation and documentation of tree and landscape losses for over 200 properties involving 90,000 trees. Advanced database designs, appraisal cost models, electronic field data collection, and GPS locations/mapping procedures were developed as part of this work.



ARBORICULTURAL and HORTICULTURAL SERVICES

Arboricultural Appraisals and Evaluations

- Use of advanced tree appraisal software (developed by Mr. MacNair) including electronic field data collection, and GPS locations/mapping procedures. Tree appraisals performed using CTLA (Council of Tree and Landscape Appraiser) methods as described in the Guide for Plant Appraisal (10th Edition). Specialized cost models developed and used for analyzing costs for site and landscape remediation.
- Tree evaluations for heritage tree ordinances, including tree preservation, construction protection, mitigation specifications, and long-range tree management programs.
- Tree surveys for evaluation of health and structural conditions, including risk assessment.
- Management programs establishing guidelines for pruning, cultural care, and pest and disease control.

Expert Witness

- Forensic documentation and analysis of tree failures.
- Extensive forensic and claim damage experience in over 20 wildfire cases.
- Appraisals of properties damaged by fire, storm, trespass, or accident. Council of Tree and Landscape Appraisers plant appraisal methods used to determine opinions of value.
- View obstruction reports and recommendations.
- Landscape construction defects.

Site Analysis

- Soil sampling for determination of soil fertility, physical characteristics, and identification of chemistry problems. Site specific recommendations developed for effective use of fertilizers and amendments.
- Review of all environmental parameters likely to affect plant growth. Site analysis provides criteria for appropriate plant selection to ensure successful and functional landscapes.

Landscape Management Manuals

- Performance oriented management specifications for protection and care of the landscape. The Landscape Management Manual provides:
 - Equitable bid evaluations
 - Verification of contract performance
 - Establishment of long-term maintenance program
 - Quarterly task schedules and report formats
 - Documentation of all pesticide and herbicide use
 - Budget analysis and cost projection
- Periodic walk-through evaluations ensure that maintenance is appropriate and allows adjustments in procedures as a landscape matures.

Irrigation Management Programs

- Site specific programs designed to conserve water usage, while promoting plant health. Proper irrigation management reduces incidence of pests and diseases, lowers plant replacement costs, and decreases fertilizer and pruning requirements.
- Site specific procedures for modifying existing irrigation programs. Water requirements are evaluated for maximum conservation of water and reduction of water costs.

James MacNair was a participant in the Department of Water Resource's Landscape Water Management and Master Auditor Training Programs. He has designed computer software (ET Calc™) for calculating landscape water use and irrigation schedules. He was a member of the committee responsible for the publication Water Use Classification of Landscape Species for the Department of Water Resources and the University of California Cooperative Extension.

Plant Selection

- Plant selection for unusual, difficult, or adverse site conditions. Plant selection matrices designed to provide accurate and comprehensive data in an easy to read format. Recommendations are based on extensive field experience and latest horticultural research.
- Review of planting and irrigation plans for cultural compatibility and maintenance efficiency. Pest and disease control, irrigation, fertilization, and pruning requirements are evaluated for minimizing future maintenance costs and optimizing performance.

Plant Procurement Contracts

- The establishment and administration of growing contracts for future projects to ensure availability and quality of plant material. Contract growing protects project quality, without adding to project cost.

Landscape Installation Evaluations

- Plant quality inspections evaluating for proper size, branch structure, root health, and presence of pests or disease. This service assures the installation of quality plants for optimum performance and landscape success.
- Site evaluations to verify conformance to design specifications for plant quality, planting techniques, soil amending, staking, irrigation, and initial maintenance.

Landscape Problem Analysis

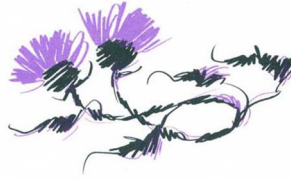
- Horticultural evaluation of existing landscape maintenance programs reviewing specific problems or management procedures. Site specific recommendations provided to improve plant health and vigor and protect the landscape improvement asset.
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Environmental Restoration and Management

- Complete evaluative and management services for environmentally sensitive projects.
- Vegetation analysis of existing plant species for preservation, revegetation, or management planning.
- Riparian vegetation preservation plans and tree protection guidelines to protect and preserve existing riparian areas and specimen trees during construction and maintenance.
- Revegetation plans for restoring native plant communities. Specifications and procedures developed for specific site requirements. Administration and supervision of seed and cutting collection, propagation and growing contracts, installation, and maintenance.
- Seeding and planting recommendations for effective, long term slope protection and erosion control.

Seminars and Training Programs

- MacNair and Associates is available to provide lectures or training seminars on such topics as assessment of fire damage, fire damage appraisals, plant selection, designing landscapes for maintenance efficiency, water conservation, and landscape management.



SELECTED ARBORICULTURAL PROJECTS

CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)- Roadside Vegetation Management Study

- A comprehensive study of Caltrans roadside vegetation management policies and practices, including a detailed inventory of 271 roadside plantings. The study provided an evaluation of Caltrans directives, policies, and procedures as they are implemented through landscape design, construction, and roadside maintenance programs. A cost/benefit analysis was performed comparing four years of maintenance costs associated with the various landscape planting categories.
- The Roadside Vegetation Management Handbook was written for use by Caltrans personnel throughout California. This 350-page management manual covers such topics as irrigation management, plant selection, soil management and fertilization, pruning and tree maintenance, and pest and disease control. Special emphasis was placed on water conservation management practices.

CALIFORNIA DEPARTMENT OF TRANSPORTATION- Broadway Eucalyptus Evaluation and Resistograph Study

- Consulting arboricultural services provided to Caltrans. This project involved a detailed risk evaluation of mature blue gum eucalyptus growing along Hwy 12 (Broadway) in the City of Sonoma. A research project evaluating the effectiveness of the Resistograph™ for detection of internal decay was also performed as part of the evaluation.

CALIFORNIA DEPARTMENT OF TRANSPORTATION- El Camino Real Eucalyptus Evaluation and Resistograph™ Study

- Consulting arboricultural services provided to Caltrans. This project involved a detailed health and structural evaluation of mature blue gum eucalyptus growing along El Camino Real in the City of Burlingame and internal decay analysis utilizing the Resistograph™.

CALPINE CORPORATION- Audubon v. Calpine Wildfire Damage

- Expert witness services assessing the fire damage and claims associated with this 13,000-acre fire. The assignment required extensive damage documentation, repair and mitigation cost analysis, and direct participation in mediation and settlement conferences.

CITY OF EL CERRITO- Landscape Management Plan and Urban Forestry Plan

- This contract was performed in collaboration with Vallier Design Associates of Point Richmond, CA. The project required a review of Government Accounting Standard Board (GASB) requirements as applied to El Cerrito public sites.
- Forty-eight public sites were evaluated and inventoried. Each property was surveyed for the number and condition of trees, landscape characteristics including shrubs and groundcovers occurring, and current maintenance levels and deficiencies. All trees were described using trunk diameter classifications, health and structure ratings, and any potential hazardous conditions observed. Data spreadsheets and site maps were prepared showing inventory results as well as renovation, replacement, and maintenance costs associated with the landscape plantings and hardscape areas.
- A public survey was conducted to obtain public perceptions, use patterns, and maintenance goals for landscape facilities. An Integrated Pest Management plan was prepared for future implementation.
- An Urban Forestry Plan was completed and included a street tree inventory and city street master plan components.

CITY OF HEALDSBURG- Contract City Arborist

- Contract Arborist providing tree evaluations and risk assessments of city parks and public properties including the historic Healdsburg Plaza. Review services for Heritage tree removal requests and projects located within Landscape Improvement Districts.

CITY OF RICHMOND- Hilltop Landscape Maintenance District

- This contract included arboricultural recommendations, ongoing landscape planting and maintenance evaluations, landscape irrigation evaluations, irrigation scheduling recommendations, review of existing landscape maintenance program, and program quality control implementation.

CITY OF SONOMA- Broadway Improvements, City Street and Heritage Tree Inventory, and Sonoma Plaza Tree and Landscape Management Plan

- Species selection and nursery procurement for the Broadway Improvement Project. Computerized inventory for identification and assessment of city street and historic trees. Preliminary report for establishment of a city street tree master plan.
- The Sonoma Plaza Tree and Landscape evaluation documents the health and condition of the historic plants growing at the plaza and provides recommendations for their long-term maintenance and care. The evaluation will include a review of current tree and landscape maintenance practices, drainage problems, and the functionality of the irrigation system.

ELECTRICAL UTILITY AND VEGETATION MANAGEMENT COMPANIES- Consultant and Expert Witness

- Over 40 cases completed for ACRT (utility inspection), Asplundh Tree Company (Utility Tree Service), Davey Tree Expert Company, and Pacific Gas and Electric company.
- Tree failure analysis, electrical line clearance compliance, and tree risk inspections. Reference: California Public Resource Codes 4292, 4293, 4296 and CPUC General Order 95, Rule 35.

LETTERMAN DIGITAL ARTS CENTER, PRESIDIO, SAN FRANCISCO- Arboricultural and Landscape Development

- This project provides comprehensive services ranging from development of a historic tree protection program, health and structural evaluations of mature trees, reclaimed water use in the landscape, plant selection review, landscape tree procurement, and preparation of a landscape management plan.
- Over 570 specimen trees were selected and purchased under the direction of Lawrence Halprin and Associates. A tree nursery was established in the Presidio for holding and transplanting of project trees.

PRESIDIO PARKWAY PROJECT, PRESIDIO, SAN FRANCISCO- Growing Contract, Plant Research, Design Review

- Analysis of plant procurement requirements, availability, and best management practices standards for disease prevention (*Phytophthora spp.*).
- Plant research for issues of invasiveness, historical use, and disease susceptibility.
- Serpentine and soil pH tolerance research of plants proposed for use on the Parkway project.

SAN DIEGO FIRE LAWYERS, SAN DIEGO, CA- Old Guejito, Rice Canyon, and Witch Creek Fires: Tree/Woodland Damage Assessments and Appraisals

- The assessment of over 170 properties in San Diego County impacted by the October 2007 wildfires. Services include the inventory and documentation of trees killed or damaged by the fires. Currently over 90,000 trees have been evaluated.
- Specialized database software was created to document tree species, trunk diameters, pre-fire condition, and severity of fire damage. Advanced database, electronic field data collection, and GPS locations/mapping procedures were developed and utilized in the evaluations and damage appraisals. Cost models were developed for analyzing for site remediation requirements and cost of cure opinions of value.

KENWOOD RANCH, KENWOOD, CA- Arboricultural Evaluations, Tree Preservation and Protection Plan, Construction Observation

- Resort project involving the inventory and assessment of native woodlands within the project limits. The tree inventory includes health, structure and risk assessments with detailed project submittal reports and tree protection specifications. Specialized studies involve the impact of the Douglas fir flat-headed borer and recent wildfire impacts.

STERN GROVE FESTIVAL ASSOCIATION, SAN FRANCISCO, CA- Arboricultural Evaluations, Tree Preservation and Protection Plan, Construction Observation

- Evaluation of trees within the project limits of the Stern Grove Concert Meadow. A comprehensive tree protection plan was prepared for this historic site. Tree protection observation was provided throughout the project construction. Detailed resistograph and air spade diagnostic procedures were used for evaluation of a historic eucalyptus tree.

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STONEBRAE COUNTRY CLUB, HAYWARD, CA- Arboricultural Evaluations, Tree Preservation and Protection Plan, Construction Observation, Tree Growing Contract

- Documentation and database management of over 3000 trees. A tree preservation and mitigation plan was prepared as part of the project's conditions of approval as well as ongoing tree protection observation. An oak protection brochure was prepared for use by the Homeowners Association.
- Management of a large tree growing contract designed to provide the project with availability of the specified trees, a high quality standard, and purchased at a competitive cost.
- Post-transplant management of mature coast live oaks (up to 30-inch diameter).

TREASURE/YERBA BUENA ISLANDS REDEVELOPMENT PROJECT- Arboricultural Evaluations, Tree Preservation and Protection Plan, Construction Observation

- Research and development of a Phytophthora disease prevention program for the native plantings on Yerba Buena Island.
- Evaluation and documentation of mature trees identified as candidates for transplanting.
- Tree health and risk assessments of trees within project development areas.
- Tree protection specifications and monitoring.



Professional Resume for James MacNair

Educational Background

1972- SONOMA STATE UNIVERSITY, Bachelor of Arts, Psychology, graduation with honors.

Subsequent areas of college level study include Arboriculture, Botany, Environmental Science, Irrigation Management, Irrigation with Municipal Wastewater, Plant Ecology, Plant Pests and Diseases, Plant Taxonomy, Soil and Water Analysis, and Viticulture.

Professional Background

1973-1975 **Sonoma Grapevine**, Santa Rosa, California, and, **VINEYARD TECHNICAL SERVICES**, St. Helena, California. Production Manager of greenhouse operations producing bench-grafted grapevines and potted foliage crops. Mr. MacNair was responsible for the production of over one million grapevines planted in Napa and Sonoma counties.

1975-1984 **SKYLARK WHOLESALE NURSERY**, Santa Rosa, California. Principal, Vice-president, and Sales Director with responsibilities including marketing, re-wholesale plant purchasing, production, inventory control, and corporate duties. Special emphasis was placed upon the introduction of Mediterranean and California native plants to the landscape trade. Because of his knowledge of the growth habits and cultural requirements of these plants, Mr. MacNair has lectured and written numerous articles on their use in the landscape.

1984-1989 **HORTICULTURAL TECHNICAL SERVICES**, Santa Rosa, California. Principal/Consulting Horticulturist and Arborist. Professional consulting firm providing horticultural expertise to landscape architects, federal, state and municipal agencies, developers, and homeowners associations.

1991-1997 **IRRIGATION MANAGEMENT GROUP**, Union City, California. Principal. IMG specializes in the production of irrigation and horticultural computer software. Mr. MacNair served as software designer, technical writer, and irrigation management consultant.

1990-Present **MACNAIR AND ASSOCIATES**, Glen Ellen, California. Principal/Consulting Arborist. Certified ISA Arborist WE-0603A, ISA Tree Risk Assessor Qualification, ASCA Tree and Plant Appraisal Qualification, and Landscape Horticulturist. Areas of specialization include arboricultural evaluations, software design, expert witness services, tree damage appraisals, irrigation management, plant selection, and landscape management.

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James MacNair
 Articles, Books, Presentations, and Professional Papers

Date	Title	Publication/Conference Proceedings
1977-1980	Plant Profiles- California Native and Mediterranean Plant Introductions- Article Series	California Landscape Magazine (CLCA)
June 1985	Oak Forest- A Lester Hawkins Legacy	Pacific Horticulture
December 1985	Plant Selection- A Pragmatic Approach	Paper and Lecture- 1985 Xeriscape Conference
May 1986	Native Plants for Planting with Oaks	Landscape and Irrigation News
January 1987	Water Conservation in the Landscape- A Horticultural Perspective on the Interaction of Design, Installation, and Maintenance	Paper and Lecture- 1987 Marinscape Conference
July 1991	Roadside Vegetation Management Handbook	California Department of Transportation
February 1991	Water Conservation and Maintenance- The Technical Requirements	Paper and Lecture- 1991 Northern California Xeriscape Conference
February 1992	Estimating Water Use and Irrigation Schedules for Ornamental Landscapes	Paper and Lecture- 1992 Water Efficient Landscaping Conference
February 1992	Water Use Classification of Landscape Species	Project Participant. University of California Cooperative Extension
June 1993	ET Calc User's Handbook	ET Calc- Water Conservation Software for Landscape Design and Maintenance
February 1994	Estimating Water Use in Landscapes	Landscape and Irrigation News
January 1995	Water Conservation in Commercial Landscapes	CAI Magazine
August 1995	Calculating Irrigation Schedules for Overhead Sprinkler Systems	Landscape and Irrigation News
February 1996	Trees for Rhododendron Gardens	American Rhododendron Society

Date	Title	Publication/Conference Proceedings
January 2003	Detection Study Using the Resistograph- Structural Evaluation of <i>Eucalyptus globulus</i>	Study conducted for Caltrans. Presentation to the Annual Tree Failure Conference and the City of Sonoma City Council.
October 2005	Letterman Digital Arts Center- Landscape Construction and Historic Tree Protection.	Presentation to the Bay Area Landscape Supervisors Association.
January 2006	Root Failure- Douglas Fir	Presentation to the CTRFP (California Tree Failure Report Program)
April 2011	Tree Damage Assessment and Appraisal Mediator Orientation	Presentation to mediators assembled for the Witch Creek and Rice Fire litigation cases.
September 2013	WUCOLS Redux- Selecting the Right Plants for California's Future- Plant Water Use Ratings: Inside the Committee Process	Presentation to the WUCOLS 2013 Conference.
January 2015	Wildfire Tree Damage- 2007 Witch Creek Fire	Presentation to the 14 th Annual Pest and Disease Symposium
June 2015, September 2015, November 2015	Irrigating Trees Effectively	Presentations to Trees and Drought- Using Water Wisely Workshop.
January 2018 March 2018	Assessing the Viability and Risk of Fire Damaged Trees	Presentations to the CTRFP (California Tree Failure Report Program)
January 2018 March 2018	Case Study- Woodland Valley Oak Failure	Presentations to the CTRFP (California Tree Failure Report Program)
February 2018	Assessing the Viability and Risk of Fire Damaged Trees	Article Western Chapter International Society of Arboriculture, Spring Edition
April 2018	Appraising Fire Damaged Trees	Presentation to the Western Chapter International Society of Arboriculture Annual Conference, Santa Rosa, CA
May 2018	Appraising Fire Damaged Trees	Presentation to the Northern California Chapter Appraisal Institute 2018 Annual Spring Litigation Conference
January 2021	Impacts of Fire on Tree Structure: Observations from the Field	Western Tree Failure Database Annual Meeting (Webinar Presentation)
April 2021	Impacts of Fire on Tree Structure: Observations from the Field	Educational Webinar for the American Society of Consulting Arborists