

AN
ECOLOGICAL AND LAND-USE HISTORY
OF
THE HEADWATERS PROPERTY

SONOMA COUNTY, CALIFORNIA

LOS ALAMOS ROAD, SANTA ROSA • PARCEL # 030-020-004



San Francisco 05042 A-1089-B
The United States of America,
Do all to whom these presents shall come, Greeting:

WHEREAS, a Certificate of the Register of the Land Office at San Francisco, California,
has been deposited in the General Land Office, whereby it appears that full payment has been made by the claimant
William A. Rohrbach

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Special thanks to Margaret Spaulding, who commissioned this report; Charles Mikulik, archaeology graduate student at Sonoma State University, who assisted in the field survey and provided preliminary assessments; Scott Butler, who provided his raw timber cruise data; and to a number of other individuals who provided invaluable information about the property (see 'personal communications' listed among the Sources).

DISCLAIMER: While every effort has been made to be accurate, further research may bring to light additional information. Baseline Consulting guarantees that the sources used for this history contain the stated facts; however some speculation was involved in developing this report.



ESSENTIAL INFORMATION FOR LANDOWNERS & RESOURCE MANAGERS

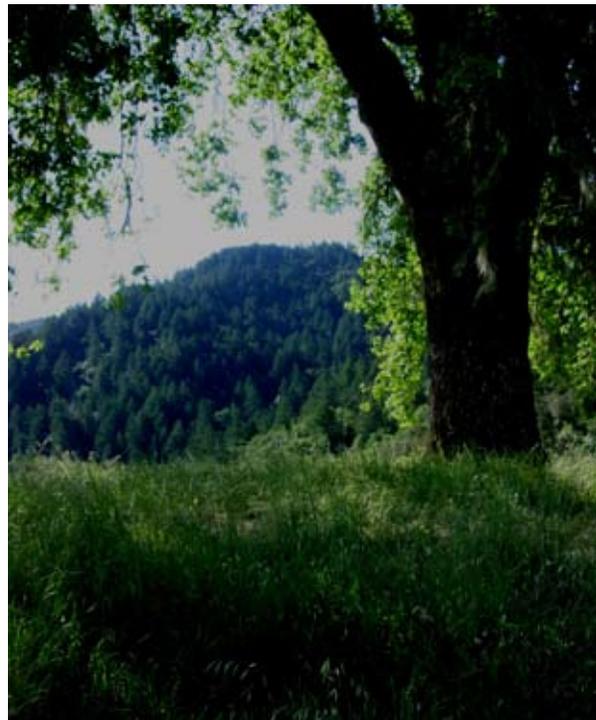
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OVERVIEW

Though less than four miles as the crow flies from the urban edge of Santa Rosa, Headwaters' rugged terrain has protected it from many human influences. The property's human history reflects this, being fairly simple and straightforward. Even in native times, Headwaters was a remote spot, likely used only as a temporary hunting and fishing camp. Nearby areas in the Mayacamas were homesteaded in the 1860s, but the property did not attract any settlers, and presumably was little used, until 1919, when it was purchased from the government by William Rohrbach. Its primary use over most of the following decades was again as a hunting and fishing camp, and as a retreat. The notable exceptions were several cycles of logging which took place between the early 20th century and about 1970, road and culvert building, and some grazing. Only one person, Bill Wilson, is known to have used the property as a part time residence; this was in the latter part of the 20th century. After more than 40 years of family ownership by the Wilsons, Headwaters passed to the Newfields in 1986 and then to the current owner Margaret Spaulding and her husband Ewald Detjens in 1999. Recognizing the property's outstanding habitat value, a conservation easement was established with the Sonoma Land Trust in 2000. Much work has been done in the last twelve years to repair the damage created by previous owners who bulldozed roads, turned the wetland into a pond, and left piles of debris. With the goal of bringing Headwaters back to full ecological health, restoration efforts, such as planting old road beds and eroding slopes with native plants, are ongoing.

The most striking ecological change at Headwaters has been a substantial shift in vegetation over the last two centuries. The driving force for this has been the use and suppression of fire. During the native era, fires are estimated to have burned through Headwaters every decade or two. Fire was used as a management tool and many of these fires were intentionally set (see 'Fire' section for more on this). A few were probably started by lightning storms. As native people were brought into the missions in the 1820s and 1830s, traditional burning practices declined. Native burning probably stopped completely after the smallpox epidemic of 1837–38, which is estimated to have killed 90% of the First Peoples of Sonoma County. During the remainder of the 19th century and into the early 20th century, fires were not intentionally set, but neither were they extinguished (at least in remote areas). There is no evidence that Headwaters saw



VIEW INTO HEADWATERS
approaching from the west.

any major wildfires during this period. However, the buildup of fuel resulted in a major wildfire nearby in 1923 that destroyed many homes in Sonoma Valley. The first rural fire departments in the county were set up soon after and the active suppression of fire began. Only one fire is known to have burned portions of Headwaters since 1950. This was in 1994 and burned from the northern part of the property down to Santa Rosa Creek. The forest south of the creek was untouched.

The effects of intentional burning and intentional suppression are evident in both the historical record and current conditions. Early surveyors who visited Headwaters in 1869 and 1872, recorded large areas of chaparral and also places where chaparral species, such as chamise and manzanita, were part of the forest understory. Douglas firs were present, but not dominant along survey lines. Today, after many decades of fire suppression, firs are becoming increasingly common in most of the habitats at Headwaters. Once common, chaparral has almost disappeared from Headwaters, due to colonization of this habitat by firs and other trees.

Logging probably began at Headwaters in the early 20th century, after nearly one hundred years without a large fire. The first trees were harvested near Santa Rosa Creek and were up to about 4' in diameter; large enough to have begun growing as early as the 18th century. After World War II, improvements in technology allowed logging to reach more remote mountainsides. Harvested trees in these areas were generally smaller in size and probably started growing after frequent fires ceased. The last cycle of logging likely took place in the 1960s or early 1970s. As of 2012, almost all logged areas at Headwaters have reforested.

TIMELINE

7000 B.C. or earlier: First humans arrive in Sonoma County at the end of the last ice age. These may have been ancestors of the Wappo people who were living in the Mayacamas when the Spanish first reached the area in the early 19th century. The Wappo language is believed by some linguists to be the oldest native language in California. The word *tsonoma* (Sonoma) is probably of Wappo origin.

Wappo speakers using the Headwaters property at the time of European contact are probably members of either the *Guiluc* tribe, centered near present-day Sugarloaf Ridge State Park; or the *Canijolmano* tribe, centered near modern-day St. Helena. Given its location, the property likely served as a temporary hunting and fishing camp. An archaeological site exists near the freshwater wetland, where obsidian flakes have been found.

The Coast Miwok name for Santa Rosa Creek is said to have been *Chocoalomi* (*Choc*, sometimes spelled *tcok*, was the word for creek). The Miwoks intermarried with the southern Pomo, who were centered near present-day city of Santa Rosa. The Wappo probably had a different name for the creek

1807 - 1812: Russians develop a presence in Sonoma County, culminating in the establishment of Fort Ross. Headwaters, being between Fort Ross and Mission San Francisco, is on the boundary between the Russian and Spanish empires.

1810: Spanish soldier Gabriel Moraga travels through the Santa Rosa area while returning from an expedition to Bodega Bay to assess Russian activities there.

1820 - 21: First Wappo speakers baptized at Mission San Francisco, including members of the *Guiluc* and *Canijolmano* tribes.

1822: Mexico wins independence from Spain.

1823: Father Jose Altimira founds Mission San Francisco de Solano. First mention of "*la nacion Guiluc*" in mission records. Members of the *Guiluc* tribe were baptized here between 1825 and 1832.

1835: After secularization of the California missions in 1834, General Vallejo takes control of mission property and establishes the Pueblo of Sonoma.

1836: Treaty signed between leaders of seven tribes, including the *Guapos* (Wappos), and Lieutenant Vallejo.

1837: Scottish sea captain John Wilson is granted the 18,833 acre Rancho Los Guilucos by Mexican governor Juan Alvarado. This grant includes a portion of Santa Rosa Creek about three miles downstream from the Headwaters property. Wilson had been sailing into Bodega Bay with cargo destined for Sonoma and picking up hides at the ranchos. He marries Ramona Carrillo, General Vallejo's sister-in-law, and changes his name to Juan to obtain Mexican citizenship so he can legally receive the grant.

1837 – 1838: Smallpox epidemic spreads from Fort Ross to Sonoma and then throughout the region. An estimated 60,000 or more native people in Sonoma, Mendocino and Lake counties die from the disease. Native use and management of the Headwaters property

probably declined drastically or stopped at this time. Some of the larger Headwaters' Douglas firs (40' – 50" diameter in 2000) may have sprouted around this time.

c. 1840 Mexican Land Grant map for *Rancho Cabeza de Santa Rosa* shows Santa Rosa Creek as "Arroyo de Permanente" (permanent stream). Mountains in the vicinity of the Headwaters property are called *Cierras del Chi se na* ('Mountains of . . . ' Unable to translate). Because of its unsuitability for cattle or agriculture, the Headwaters property remains outside of the land grant system.

1846: Bear Flag Rebellion in Sonoma, followed by annexation of California as a territory of the United States.

1850s: Population of Sonoma County increases more than twenty-fold, from 500 to over 11,000.

1850s – 1860s: Prospectors active in the area and possibly set foot on the Headwaters property. First General Land Office Survey in 1869 mentions that "copper has been found in sections 5 and 6, but prospecting for it has long since been abandoned."

1869: First General Land Office (GLO) survey on and near Santa Rosa Creek Headwaters. Survey mentions "Foundation of house started by Wm. McCormick" about 1.5 miles northeast of the Headwaters property. Survey map describes the area as "Precipitous chamisal mountains unfit for cultivation."

1872: Second GLO survey on property. One of the 'chainmen' was H.M. McCormick. S.S. Weeks and P.E. Weeks also assist the survey as 'chainman' and 'axeman.' The McCormicks and Weeks families are both early homesteaders in the area.

Early surveys indicate a range of conditions from 'brushy' chaparral to oak, fir, madrone and bay forest. Headwaters' longer southern boundary is described as "Land third-rate, broken, covered with chemisal. Line runs on north slope of steep mountainside."

1870s: McCormicks and/or other homesteaders may have begun using parts of the Headwaters property for grazing.

1877: First Sonoma County Atlas shows no landowners.

1884 – 1894: First wave of homestead patents in Section 6 begins immediately north of Headwaters property . Most of these settlers probably arrived in the 1870s and 1880s.

1888: Third GLO survey on property. "With the exception of some scattering timber in Section 7* . . . the country is very rocky and covered with brush." (*southern 'leg' of property is in Section 7.)

1919: Patent granted by the U.S. government to William A. Rohrbach for the Headwaters property. Rohrbach purchased the land rather than homesteaded it, which would have required him to occupy the property for five years before receiving title.

1923: Frederick Lippert and Charles de Groote purchase property from Rohrbach. January 24.

1923: Huge wildfire in the Mayacamas destroys much of the 'Springs' and El Verano in Sonoma Valley. It is unknown whether this fire affected the property, though the fact

that logging took place within two or three decades suggests damage was light or non-existent (property is shielded from north winds, which often fan the big wildfires in the area).

1924: Lippert and de Groote sell property to Orlando R. Beer and his wife Charlotte. January 12. The Beers live in San Francisco and there is no evidence that they occupied the property. Born about 1863 in Pennsylvania, he arrived in California in the 1880s and is a printer by trade. Charlotte also works in the printing industry.

Orlando dies the same year and property passes to Charlotte. Within a few years she marries Stephen La Page, who also works in the printing industry as a 'linotype proofreader.' There is no evidence that Charlotte or her second husband ever used the property as a primary residence—all records from this period show them living in San Francisco.

1920s – 1930s: First cycle of logging believed to have occurred, given the sizes of trees recorded during the 2000 timber survey. Logging probably took place near Santa Rosa Creek.

1940: Charlotte passes away. The property is sold by her husband, Stephen, to the Basilia Land Company, for \$350, a little over \$2 an acre. Basilia Land Co. is owned by Ed Mohrhardt, who is a real estate broker in San Francisco. His son, Phillip, described it as a holding company for his father's properties (Phillip was born in 1947 and said it was unlikely his father ever logged the property. He did say his dad had logged at least one other property in the county.).

c. **1941:** Headwaters property passes to Albert and Iva (or Ivy) Pike.

1942: Earliest aerial photo appears to show some evidence of logging and roads.

c. **1942:** Alec Leslie, who lives in Oakland and was a manager at General Electric, sees the property advertised in the paper and buys it. He uses it for recreation and invites his brother, Bill Wilson, and his family to visit.

1944: First direct evidence of dwelling (USGS topo map). Road to property is shown as trail.

Report of stocking trout in Santa Rosa Creek at a rate of 5,000/year.

1946: Stream survey by California Department of Fish and Game: "Character of drainage basin: Canyons, mountainous, hilly, rolling . . . wooded, logged off, burned off, open, uncultivated, meadows, ravine, brushy . . .

"Sea-run steelhead ascend Santa Rosa Creek to its very Headwaters and also spawn in Salt Creek, a tributary."

1940s – '50s: Likely date of one or more episodes of logging, according to several people knowledgeable about the property and Scott Butler, who did the timber cruise in 2000.

c. **1956 - 1986:** Property owned by Bill Wilson, who bought it from his brother Alec. Bill's daughter, Allene Cornolo, said her family used it for recreation, including hunting for deer and turkey. They had a cabin, a barn, a workshop, and a couple of horses. After Bill

retires (unknown date) he lives at the Headwaters much of the time.

Allene recalled: "The McCormicks used to run their sheep on the property. Not really cattle, but sheep. They had a lot of sheep." She also recalls fishing for trout and steelhead in Santa Rosa Creek.

c. 1965: Allene recalls, "It was logged soon after I got married in 1964."

1968: Hood Mountain Regional Park established, some of it from unclaimed lands still held by the U.S. government that were never homesteaded.

1960s & '70s: Poorly-designed stone culverts reportedly built, which begin causing erosion which brings excess sediment into Santa Rosa Creek.

c. 1970: possible date of logging, according to Allene Cornolo's husband

1976: Easement to Bill and LaVone Wilson for use of spring outside of property boundary granted by the Learneds.

1986: Bill Wilson sells Headwaters property to Victor and Vicky Newfield for \$150,000. Newfield indulges in "recreational bulldozing," making road cuts "for the ladies to walk on," and also digging out the pond "for the ladies."

1994: Fire reported by Newfields. "No major damage." California Department of Forestry records show this fire reaching as far south as Santa Rosa Creek.

1999: State/Regional Parks offers Victor Newfield \$250,000 for property, but he ends up selling to Margaret Spaulding and Ewald Detjens, who spend a substantial amount to remove debris left by previous owners.

2000: Timber cruise by Scott Butler, RPF of Environmental Resources Management, Ukiah. Net timber value is estimated at \$330,000, from 1.2 million board feet of harvestable timber

2000: Property placed under conservation easement with the Sonoma Land Trust.

2000 – ongoing: Restoration work by Circuit Riders and Sonoma Land Trust.

c. 2005: Lower road to property is washed out during the storm which peaked on December 31, 2005. Flows in Sonoma Creek during this storm were by far the highest in over 30 years of record. The immediate cause was a cut log blocking a culvert. This road was decommissioned and much of the roadbed has been actively regraded along natural contours.



'BRANDS' ON INTERIOR CABIN WALL

VN may stand for Victor Newfield.

JB, KB, NB, and SB do not match the initials of anyone known to be associated with the property.

DETAILED ECOLOGICAL & LAND USE HISTORY

NATIVE AMERICAN ERA

People may have first visited Headwaters as much as ten thousand years ago, at the end of the last ice age. These could have been ancestors of the Wappo, whom anthropologists believe were the first humans in California. At the time of contact in the 19th century, the Wappo occupied the Mayacamas. Centers of a population existed near the modern town of St. Helena and at what is now Sugarloaf Ridge State Park above Kenwood (see 'Timeline' section for more details on the history of First Peoples in the area).

A very preliminary assessment by Charles Mikulik, graduate archaeology student at Sonoma State University, is that given its remoteness and available resources, Headwaters was probably the site of a hunting and fishing camp rather than a permanent or semi-permanent village. Arrowheads and obsidian flakes have been found near the pond, which in native times was a vernal pool or spring. Charles suggested surveying the large rock outcroppings on the property for petroglyphs, as well as undertaking a more in-depth archaeological assessment.

The most significant human impact at Headwaters during this era was almost certainly the use of fire as a management tool. Many parts of Headwaters are estimated to have burned every 10 or 20 years (see 'Fire History' section for more detail on the advantages of, and frequency of burning). Though this practice probably died out in the 1820s or '30s, the effects of it were still quite visible when the first surveyors visited the property around 1870. Much of the property at that time was chaparral, or had chaparral species as understory plants in wooded areas, indicating a recent change in vegetation. Headwaters still contains a few acres of chaparral, which might be considered a legacy from this era.

FIRE

For millennia before the 19th century, fires at the Headwaters were probably much more frequent than today and were one of the major controlling factors for vegetation. These fires were likely caused both by humans and lightning. Lightning storms are relatively rare in Sonoma County, so lightning fires at Headwaters were probably many decades apart. On the other hand, Sonoma County's First Peoples intentionally used fire as a land management tool. Frequent fire provided a number of benefits: it cleared underbrush beneath oaks and other trees, making it easy to move through the landscape; it recycled nutrients in the leaf litter back into the soil; and it reduced acorn worms and other pests, which diminish the value of acorns for food. The net result was to increase the available food for both humans and game animals, which benefited from healthier, lusher grasses and forbs for grazing.

Botanist Steve Barnhart studied long-term fire frequency at Annadel State Park by looking at fire scars in tree rings. He estimates that before the mid-19th century, fires burned an average of every 7 ½ years. Many of these were probably intentional fires,

some may have been accidentally set by humans, and a few were started by lightning. Fire was probably more frequent in Annadel than at Headwaters, which was more remote from population centers and probably saw only occasional human visitors. During this era, most fires were probably set in the lowlands, or more habitable parts of the Mayacamas (such as present-day Sugarloaf), where the majority of people lived. Since there was no fire suppression, fires burned until they were extinguished by wet weather or lack of fuel. Fire was relatively frequent at Headwaters during this era, even though the area may not have been directly targeted for burning.

Intentional burning by native peoples probably diminished substantially after the establishment of the mission at Sonoma in 1823. This was because many native people joined the mission and no longer practiced traditional land management, and because the missionaries actively discouraged burning. The smallpox epidemic of 1837–1838 probably spelled the end of traditional burning practices. Ninety percent of the native people in Sonoma County are estimated to have perished at this time.

The California Department of Forestry estimates that fires at Headwaters before European settlement were mostly of low severity. The fire regime, or cycle, was estimated at 0 – 35 years for the grasslands, and 35 – 100 years for forested areas. Given the extensive chaparral and other conditions recorded around 1870 by the first surveys at Headwaters, 30 – 40 years after the end of native burning, this appears to be an overestimate (for more on this, see ‘Detailed Ecological and Land-Use’ section). The evidence suggests a pre-European fire frequency on the order of 10 – 20 years.

The biggest known fires in the Mayacamas burned in 1923 and 1964. The 1923 fire started about 6 miles to the southeast near Mt. St. John. Pushed by north winds into Sonoma Valley, it probably did not affect Headwaters. It did, however, lead to the formation of fire departments and active fire suppression in the area. In 1964, the Mayacamas saw several major fires, none of which reached the Headwaters. Besides wind direction and topography, recent logging may have made the area less vulnerable at that time.

The only recorded fire at Headwaters since 1950 occurred in 1994. It burned the northern part of the property down to Santa Rosa Creek, but left the heavily forested slopes south of the creek untouched. A former owner, Victor Newfield, reported that this fire caused “no major damage.” Like the low intensity fires which burned through the Headwaters before European settlement, the 1994 fire will probably help maintain open grasslands and reduce brush in the oak woodland areas for a period of time.

Currently, the California Department of Forestry estimates fire frequency for almost the entire Headwaters parcel at 100 – 300 years (a few acres at the southernmost portion of the property are estimated to have a fire frequency of less than a century). As the forested slopes south of Santa Rosa Creek may not have seen fire for nearly two centuries (since before the smallpox epidemic of 1837 – 1838), this appears to be roughly accurate. Fires which occur every decade or two tend to be gentler on the landscape and vegetation. Long periods between fires mean that fuel builds up and fires that do occur tend to be much more intense.

GRAZING

Headwaters does not appear to have undergone the grazing intensity that has occurred on adjacent private parcels, where extensive gullying, and many hillside cow paths are evident. Cattle are still being grazed on some of these properties.

Some grazing by cattle, horses and sheep may have occurred as early as the mid-19th century, as homesteaders settled nearby. Allene Cornolo, whose memories of Headwaters go back to the early 1940s, said, “ McCormicks used to run their sheep on the property. They had a lot of sheep.” Allene’s father, Bill Wilson, lived there much of the time after he retired and he had “a couple horses.” Wilson sold the property to Newfield. It’s unknown whether Newfield kept any livestock or allowed grazing by the McCormick’s.

LOGGING

People familiar with the property going back to the 1940s, gave a variety of answers when asked to date logging at the Headwaters, from “before 1952;” to “soon after 1964” to “once in the 1950s and again in the ‘seventies.” Harvest timber plans were first required in the early 1970s; unfortunately, data from this period is very difficult to access. It is known that no timber harvest plan has been filed for the property since 1979. Scott Butler, who performed the timber survey in 2000 and walked most of the forested area, believed it was logged in the 1940s or 1950s.

While the first lumber mills in Sonoma County were built in the 1830s, on Mark West Creek and Sonoma Mountain, it appears that Headwaters did not attract logging until at least the turn of the 20th century. Likely reasons for this include: difficulty of access— even today, the ruggedness of the area has kept it isolated and remote from nearby urban areas; a lack of harvestable timber before 1900; and possibly the predominance of Douglas fir rather than redwood.

The first surveys of Headwaters, made around 1870, reported much of it as being covered with chaparral or with chaparral species as understory plants in wooded areas. The simplest explanation for this is that the landscape was in transition between a regime of regular burning and one where fire was occasional or even rare. As native burning practices came to an end in the first half of the 19th century, conditions at Headwaters became more conducive to the growth of Douglas fir and other trees. By 1920, there had been nearly a century for trees to colonize the chaparral. Over that time, as a few trees became established in chaparral areas, they created shadier conditions in which new seedlings could more easily establish themselves. The growth of this second



DOUGLAS FIR STUMP IN LOGGED AREA
West end of Headwaters property; probably logged in early 20th century (Charles Mikulik, counting rings.).

generation of trees further changed conditions, allowing even more trees to grow. Meanwhile, chaparral plants such as chamise and manzanita lost more and more of their preferred open, sunny habitat, becoming understory plants, and eventually dying in the shade of the trees. This transition is still visibly occurring in some locations on the property.

The early surveyors did record Douglas firs as part of a mixed forest. In the vicinity of Santa Rosa Creek, Douglas fir stumps measure up to 4' in diameter, which may indicate the size of trees at the time of first logging. Douglas firs in this area are approaching this size again, with trees up to 42" in diameter.

The following is an outline of the Headwaters' logging history as constructed from oral histories, tree ring counts, diameter measurements, stump locations, early aerial photos, secondary sources (general history of logging techniques), and the assumption that the areas easiest to access were logged first. It appears that at least two or three separate episodes of logging happened over a span of many decades, each one harvesting trees from a particular area. All evidence points to harvesting of Douglas fir; no evidence was found for the presence or harvesting of redwoods:

Early 20th century (c. 1910 – 1940): Logging at Headwaters may have begun around 1919, when the property was purchased from the U.S. government; it is possible that the value of the standing timber was the impetus for the purchase. Roads during this era were built on relatively gentle gradients along portions of Santa Rosa Creek above and below the dwelling area. A spur road followed the perennial tributary at the west end of property upstream about 600' to a point where two branches meet (one intermittent) and the grade steepens considerably. During this period, trees were harvested within a short distance of these roads. Felling was probably done with handsaws. As evidenced by stumps, harvested trees in this area were around 4' in diameter. Douglas firs up to 42" diameter now grow in these areas, indicating approximately 90 years since logging (assuming trees smaller than 12" were not cut and an age/diameter ratio of 3.1 years/ inch).



LOGGING CABLE north side of Santa Rosa Creek. Probably dating to mid-20th century.

Mid 20th century (late 1940s – early 70s):

Technology developed for tanks in World War II was adapted to making caterpillar tractors, which allowed bulldozing skid roads straight up all but the steepest mountainsides. Trees were harvested higher up on the property than during the earlier cycle of logging. Trees were felled by chainsaw, which came into common use in the 1940s. Cable yarding techniques were used. This involved yoking a felled tree with a choker cable and winching it uphill with a piece of heavy equipment known as a 'yarder.' Suitable places for the yarder and the length of the cable were limitations on the harvest of trees. Lengths of logging cable can still be found at Headwaters. As evidenced by stumps, harvested trees in this

area were 2' – 3' in diameter.

Some of the largest Douglas firs at Headwaters today are found near the highest points on the property or more than 500' from known skid roads. Either situation would probably have placed them out of reach of loggers' saws. Visits to some of these areas found no stumps or other evidence of logging.

Early 21st Century Recovery: All logged over areas visited during this study or the timber assessment made in 2000 have returned to Douglas fir or mixed forest, with average firs ranging from about 12" to around 40" diameter. Some Douglas firs growing in areas logged during the first cycle are beginning to approach the size of the original trees (up to 42" diameter living trees compared to 48" diameter stumps).

WILDLIFE

While wildlife was not a primary focus of this study, the following information was collected during the research:

In 1946, the California Department of Fish and Game conducted a stream survey of Santa Rosa Creek. They noted that "Sea-run steelhead ascend Santa Rosa Creek to its very headwaters and also spawn in Salt Creek, a tributary." (Salt Creek is a tributary of the North Fork of Santa Rosa Creek, the stream crossing on the way in to Headwaters). Allene Cornolo remembers "great fishing" at Headwaters, "There were ten to twelve-inch trout and eighteen inch steelhead." This was probably in the 1940s – 1960s, when she was young and salmonids elsewhere in Sonoma County were abundant (by the 1970s, salmonids were in noticeable decline in many areas). No recent data was found.

Cornolo also recalled "lots of coyotes," and that "Learned shot a mountain lion that was preying on his sheep." Margaret Spaulding found the remains of a lion kill in Santa Rosa Creek sometime after she bought the property in 1999.

Golden eagles have been spotted on the property several times in the last few years. Hawks are commonly seen and waterfowl use the wetland area.

VEGETATION PATTERNS & CHANGES

(designations and modern locations from Enhancement Plan, CRP 2000)

ANNUAL GRASSLAND (AGS)

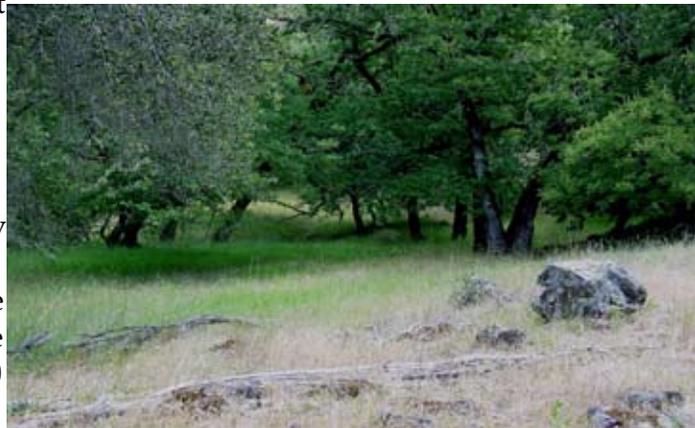
Grasslands at Headwaters exist north of Santa Rosa Creek, much of it as openings within Oak Woodland. Before 19th-century settlement, grassland areas would have been covered with native grasses and forbs. Frequent burning, at estimated intervals of 10 – 20 years, kept these areas open. Most of the grasses now present in these areas are non-native.

The 1994 fire burned the grasslands and oak woodland at Headwaters, probably opening up or maintaining grassland which would otherwise now have trees. However, eighteen years after this fire, Douglas fir and bay are visibly colonizing some of this grassland.

Headwaters had 13 acres of grassland in 1942, as measured from an aerial photo. Only 11.5 acres of grassland were measured in a recent aerial photo. A loss of about 10% grassland over the last 70 years is consistent with the results of a study of the grassy uplands at Pepperwood Preserve (Dawson 2008). While grasslands have diminished, their pattern has also shifted. Overall, trees are slowly filling in grassland, but in some places, there is grassland where there were trees in 1942 (also see next section). This 'new' grassland may have been created by the 1994 fire.

COASTAL OAK WOODLAND (COW)

Only a brief visual assessment was made of the lower coastal oak woodland at Headwaters while enroute to other parts of the property. Most of the trees were coastal live oaks estimated at 1' – 2' in diameter, suggesting that these are relatively young trees. Larger oaks, with diameters estimated at 3' – 4' diameter were seen upslope. These may be Oregon Oaks, which are dominant at higher elevations. The two largest Coast Live Oaks in the residential area measured 124" and 132" in circumference (the larger one is further south and shades the bench). Oaks studied elsewhere in the county average close to 4 years/inch of diameter. Given the range of possible values, these oaks are estimated to be about 150 years old, plus or minus 50 years.



GRASSLAND-OAK WOODLAND MOSAIC

East of residence site.

A large dead oak snag is visible from the residential area, standing in the upper grasslands. This is more evidence of the shifting nature of the grassland/woodland mosaic mentioned in the Grassland section above.

CHAMISE-REDSHANK & MIXED CHAPARRAL (CRC & MCH)

Of all vegetation types at Headwaters, chaparral has probably undergone the greatest changes and decrease in area since the mid-19th century. Early surveyors reported much



CHAMISE-REDSHANK CHAPARRAL

Upper part of Headwaters property.

of the property being covered with chaparral or with chaparral species as understory plants in wooded areas. The simplest explanation is that Headwaters at that time was a landscape in transition between a regime of frequent burning and one where fire was occasional or even rare. As native burning practices came to an end in the first half of the 19th century, conditions at Headwaters became more conducive to the growth of Douglas fir and other trees. As a few trees became established in chaparral areas, they created

shadier, moister conditions in which new seedlings could more easily establish themselves. The growth of this second generation of trees further changed conditions, allowing even more trees to grow. In effect, the trees created their own microclimate. Meanwhile, chaparral plants such as chamise and manzanita lost more and more of their preferred open, sunny habitat, becoming understory plants, and eventually dying in the shade of the trees. This transition is still visibly occurring in some locations on the property.

Today only a few acres of chaparral remain and these appear to be in the process of colonization by fir, madrone, oak, and other trees.



DEAD MANZANITA UNDER DOUGLAS FIR

Upper part of Headwaters property.



LOOKING EAST & WEST ALONG 1872 SURVEY LINE

described as "Covered with chemizal [chamise]."



DOUGLAS FIR FOREST (DFR)

At the time of the 19th-century surveys, firs were present at Headwaters, but Douglas Fir Forest as it is defined in the Enhancement Plan (60% pure Douglas fir), was probably more restricted than it is today. Fir was never recorded as the most common tree on any part of the property (it should be noted, however, that none of the early surveys reached



DOUGLAS FIR FOREST across Santa Rosa Creek from residence site. Some of the largest firs at Headwaters grow on this steep, north-facing slope, which may have supported this forest type since before 19th-century settlement.



DOUGLAS FIRS moving into Grassland/Oak Woodland east of residence site. Young bay trees are also growing here, behind the firs.

the steepest, most north-facing slopes, where Douglas fir forest would most likely have been found). In some places it was listed as the second-most common tree after ‘timber oak.’ It seems likely that as native burning practices ended in the first half of the 19th century, conditions for Douglas firs improved, and these trees began expanding their range (see ‘Chaparral’ section for more detail) and numbers into Chaparral, Montane Hardwood-Conifer Forest and other vegetation types. As mentioned above, this trend is visible today and will probably continue. The Enhancement Plan observes that “Douglas fir habitat could expand in the future within the Montane Hardwood-Conifer habitat type, especially in the absence of fire.”

Today Douglas firs are also visibly expanding into Oak Woodland and Grassland habitat types to the north of Santa Rosa Creek.

MONTANE HARDWOOD-CONIFER FOREST (MHC)

In the northeastern portion of Headwaters, early surveyors recorded a species assemblage of Oak, fir, madrone, laurel, and maple. This is similar to the description of Montane Hardwood Conifer Forest recorded in the Headwaters Enhancement Plan—“at least one-third of the trees must be conifers and at least one-third must be broadleaf.” It goes on to say that Douglas fir is the dominant conifer and Bay Laurel the dominant hardwood in some places, while elsewhere the hardwoods were made up of nearly equal

amounts of Madrone, California Bay Laurel, Big-leaf Maple, and several oak species.

A notable difference between these two records, made about 130 years apart, is that the early surveyors mentioned undergrowth of buckeye, manzanita, dogwood, nutmeg, and chemise. The presence of chaparral species in the forest understory suggests that, at least in some places, this forest had recently colonized formerly open areas of chaparral. In contrast, the Enhancement Plan describes the Montane Hardwood-Conifer Forest at Headwaters as having “little understory growth” (though nutmeg is present). As mentioned above, in the absence of fire, some of the Montane Hardwood-Conifer Forest itself may be in transition and become Douglas Fir Forest in the future.

MONTANE RIPARIAN FOREST (MRI)

Early survey data for this habitat type is slim. A single survey point lies within this zone, located 66 feet south of Santa Rosa Creek at the eastern boundary of the property. It recorded 3 oaks and 1 Bay Laurel, all 8” – 12” in diameter. A survey line connecting to this point mentions alder in its description. Currently, a mixed forest is found in this area, with tan oak and bay most common, and also including maple, madrone, coast live oak and occasional firs (up to 37” in diameter). Douglas fir stumps were found in this area measuring up to 42” in diameter. These trees were estimated at 130 years old when harvested in the early to mid-20th century and thus present before 19th century settlement.

The evidence suggests that Douglas fir has been present within the Montane Riparian Forest for a long time and does not appear to be taking over this habitat type as it is others. There may be a limiting factor which keeps these trees in check in this particular habitat type, which appears to be the most stable one at Headwaters.

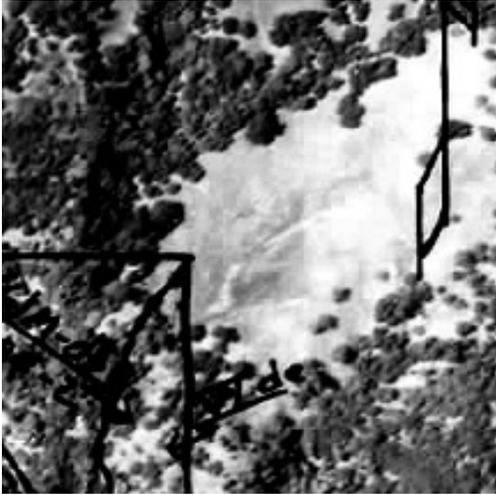
MONTANE HARDWOOD (MHW)

This habitat type is mentioned in the Enhancement Plan, but no polygons could be found with this designation on the accompanying map. It is described as growing at higher elevations with Canyon Live Oak as the normally dominant species, with other oaks, Bay, Madrone and Maple also making up the canopy. Shrubs include Toyon, Common Manzanita and Poison Oak. A similar assemblage was recorded by the early surveyors just east of Headwaters in 1869, though fir was also recorded in the canopy.

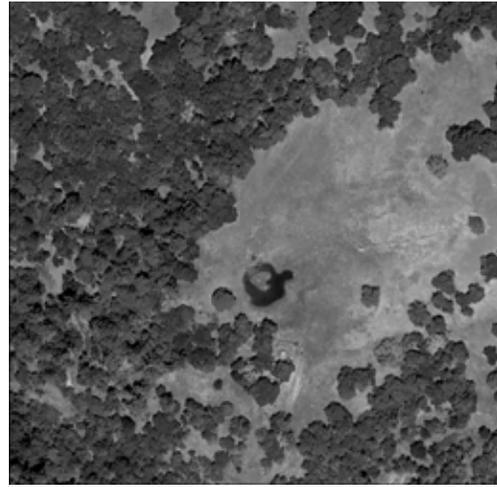
FRESH EMERGENT WETLAND (FEW)

No early surveys exist for this area. A 1942 aerial photo shows it as a dark spot in the grassland; a common indication of wetland in photos from this era. Obsidian flakes have been found in the vicinity, attesting to its use by native people. It is unknown how much the alterations done by a previous owner have affected the plant or animal life of this habitat type.

(Photos on following page)



WETLAND AREA, JUNE 6, 1942
aerial photo, visible as the darker area at the center, covering about 1.25 acres.



WETLAND/POND AREA, 2010 Aerial
photo, same view as 1942 photo.

WETLAND/POND AREA 2012

showing alterations by previous owner, including deepening the basin, creating a heart-shaped island “for the ladies,” and planting non-native trees (now removed).



San Francisco 09342

4-1023-R.

The United States of America,

To all to whom these presents shall come, Greeting:

WHEREAS, a Certificate of the Register of the Land Office at **San Francisco, California,** has been deposited in the General Land Office, whereby it appears that full payment has been made by the claimant **William A. Rohrbach**

according to the provisions of the Act of Congress of April 24, 1820, entitled "An Act making further provision for the sale of the Public Lands," and the acts supplemental thereto, for the **south half of the southeast quarter and the southeast quarter of the southwest quarter of Section six and the Lot three of Section seven in Township seven north of Range six west of the Mount Diablo Meridian, California, containing one hundred sixty-two and ninety-six-hundredths acres,**

according to the Official Plat of the Survey of the said Land, returned to the GENERAL LAND OFFICE by the Surveyor-General:

NOW KNOW YE, That the UNITED STATES OF AMERICA, in consideration of the premises, and in conformity with the several Acts of Congress in such case made and provided, HAS GIVEN AND GRANTED, and by these presents DOES GIVE AND GRANT unto the said claimant and to the heirs of the said claimant the tract above described; TO HAVE AND TO HOLD the same, together with all the rights, privileges, immunities, and appurtenances, of whatsoever nature, thereunto belonging, unto the said claimant and to the heirs and assigns of the said claimant forever; subject to any vested and accrued water rights for mining, agricultural, manufacturing, or other purposes, and rights to ditches and reservoirs used in connection with such water rights, as may be recognized and acknowledged by the local customs, laws, and decisions of courts; and there is reserved from the lands hereby granted, a right of way thereon for ditches or canals constructed by the authority of the United States.

IN TESTIMONY WHEREOF, I, **Woodrow Wilson,**

President of the United States of America, have caused these letters to be made Patent, and the Seal of the General Land Office to be hereunto affixed.

GIVEN under my hand, in the District of Columbia, the **SIXTEENTH**

(SEAL)

day of **JULY** In the year of our Lord one thousand

nine hundred and **NINETEEN** and of the Independence of the

United States the one hundred and **FORTY-FOURTH.**

By the President:

Woodrow Wilson

By

E. D. Bouldin, Assistant Secretary.

J. P. Samar

Recorder of the General Land Office.

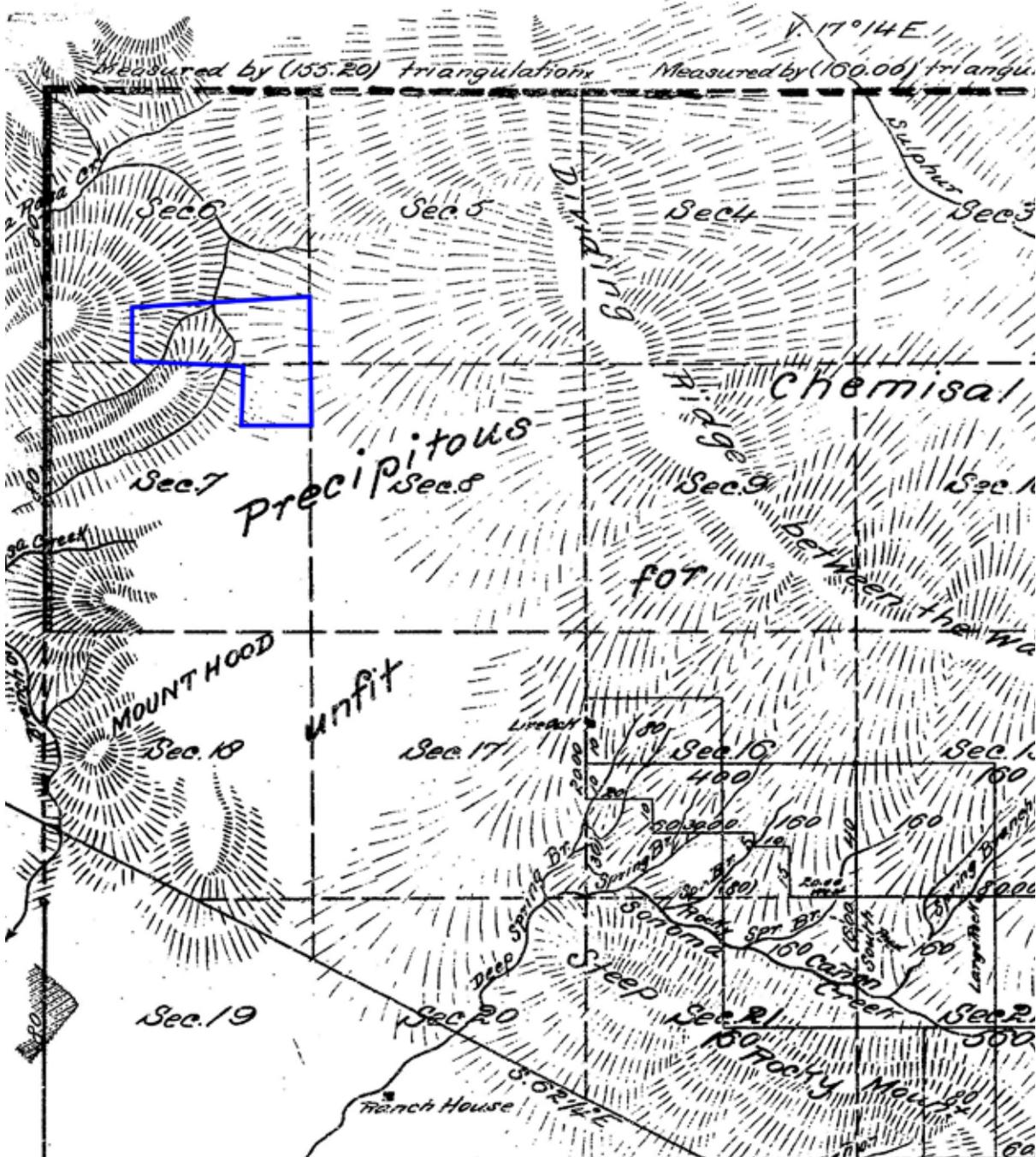
RECORD OF PATENTS: Patent Number **698788**

9-2778

ORIGINAL LAND PATENT FOR HEADWATERS PROPERTY, 1919

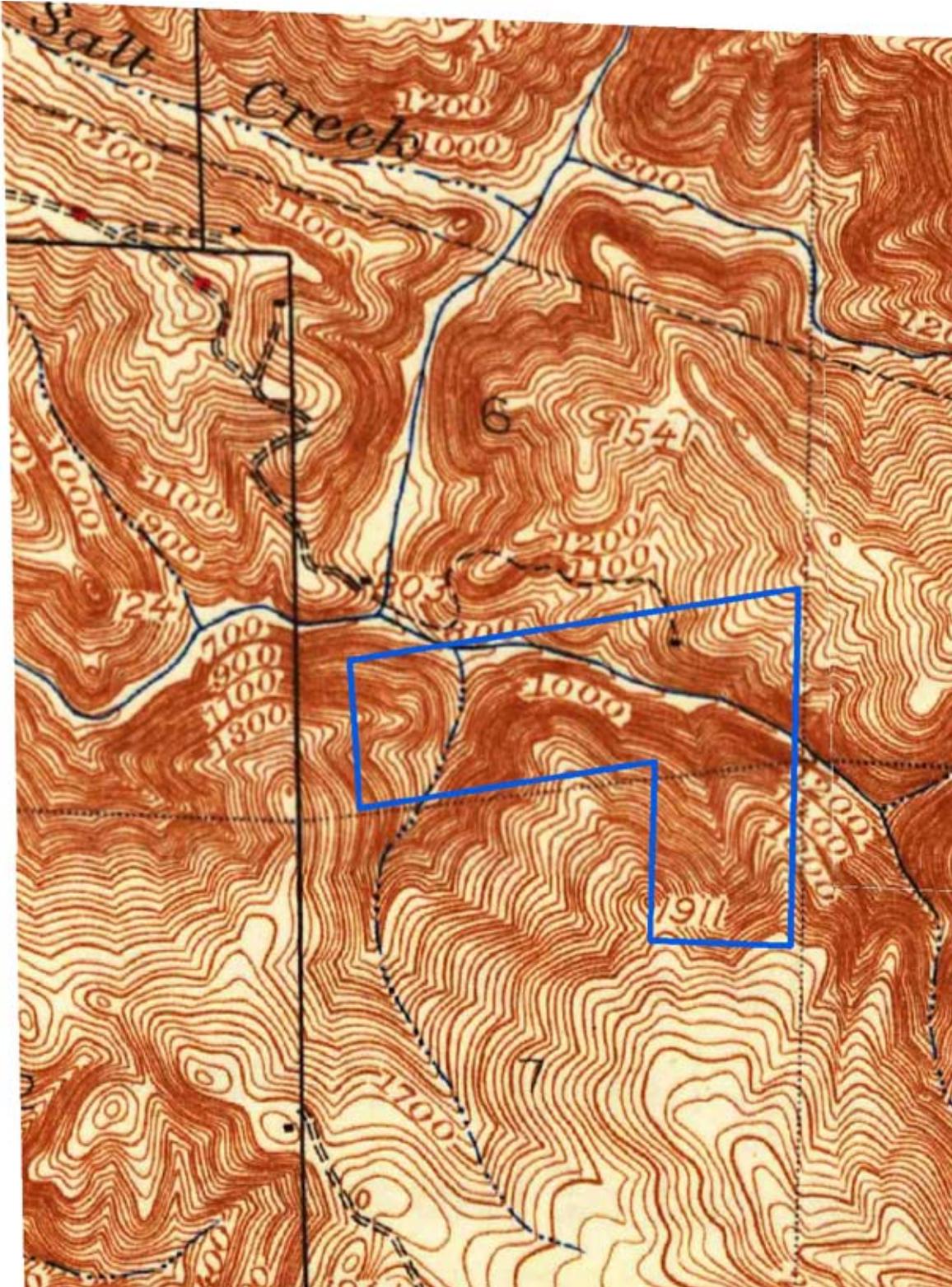
DETAIL FROM GENERAL LAND OFFICE MAP
c. 1875
(HEADWATERS PROPERTY IN BLUE)

Township N°7 North, Range N°6 West,

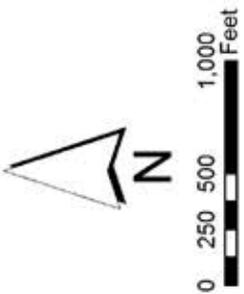
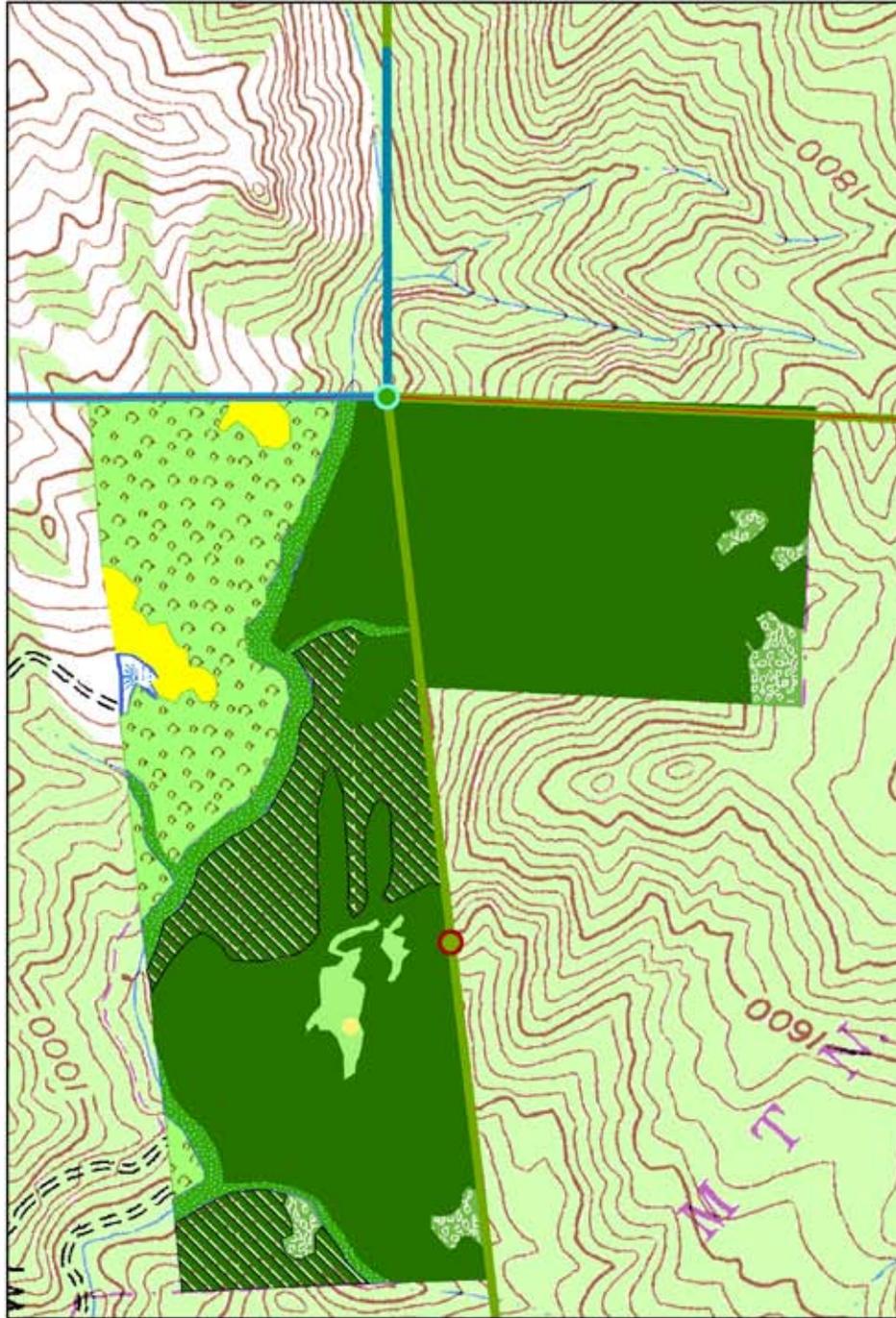


**DETAIL FROM U.S.G.S. 'SANTA ROSA' QUAD
1944**

(FIRST EVIDENCE OF DWELLING. HEADWATERS PROPERTY IN BLUE.)



HEADWATERS VEGETATION c. 1870 & 2000



General Land Office Survey Points & Lines: 1869 & 1872

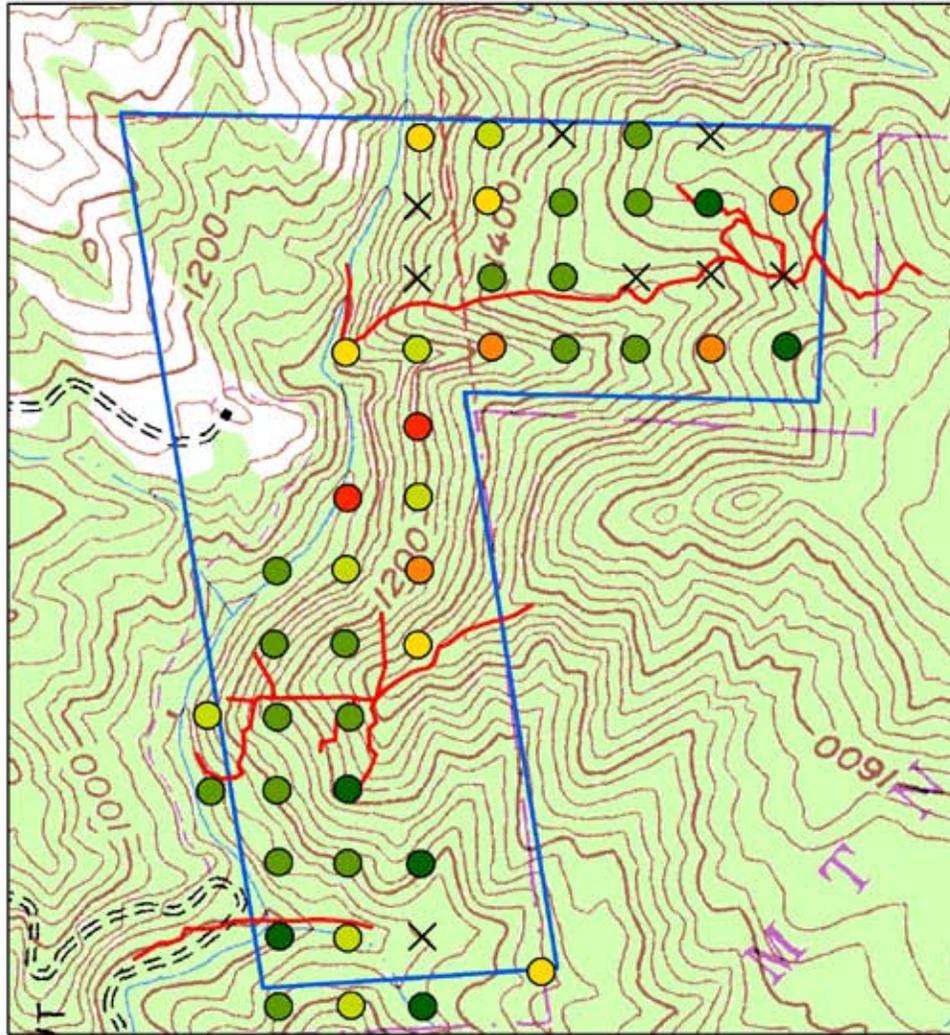
- "Madrone, No other trees convenient."
- "Brush" or "Brushy rocky and precipitous country"
- "Chamizal" or "Covered with chemical."
- "Oak, fir, laurel, madrona, and maple. Undergrowth same. Buckeye, manzanita, dogwood, nutmeg and chamizal"
- "Oak, fir, madrona, laurel and alder. Undergrowth same. Buckeye, manzanita, nutmeg, chamizal."

Plant Communities 2000 (Circuit Rider Productions)

- Annual Grassland (AGS)
- Coastal Oak Woodland (COW)
- Chamise-Redshank Chaparral (CRC)
- Douglas Fir Forest (DFR)
- Fresh Emergent Wetland (FEW)
- Mixed Chaparral (MCH)
- Mixed Hardwood-Cornifer (MHC)
- Montane Riparian (MRI)

Data from General Land Office, U.S. Department of Interior and Circuit Rider Productions, Inc.
 Cartography by Arthur Dawson, Baseline Consulting, Glen Ellen, CA
 Background, USGS Kenwood Quadrangle, 1980

SANTA ROSA CREEK HEADWATERS DIAMETER & ESTIMATED AGE OF DOUGLAS FIRS, 2000



Legend

 Headwaters Parcel
(as delineated by Sonoma County)

 Logging Skid Roads

Average Measured Diameter/
Estimated Average Age
(possible sprout dates)*

 12" - 17"/ 45 years (1945 - 1965)

 18" - 24"/ 65 years (1920 - 1950)

 26" - 29"/ 85 years (1895 - 1935)

 30" - 34"/ 100 years (1875 - 1925)

 36" - 40"/ 120 years (1850 - 1915)

 44" - 50"/ 150 years (1815 - 1890)

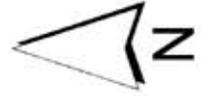
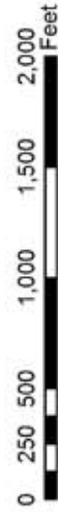
 No Douglas Fir over 12" recorded

*Based on preliminary data from a small sample number. Average was 3.1 years/inch diameter. Sprout range calculated using + or - one standard deviation.

Age of smaller trees may be overestimated. Age of larger trees may be underestimated.

Data for point near SW parcel corner collected in 2012 by Dawson and Mikuluk.

Data from: Environmental Resource Management--Timber
Cruise data collected by Scott Butler, November 2000.
Skid Roads mapped by Circuit Rider Productions, Inc. 2000
Cartography by Arthur Dawson, Baseline Consulting, Glen Ellen, CA
Background map: USGS Kenwood Quadrangle, 1980



CURRENT PHOTOS, 2012



Clockwise from top left: Large Coastal Live Oak at residence area; Santa Rosa Creek, east end of property; Steps at residence area; Iris growing on old logging landing; Indian pink; Mature Douglas fir across Santa Rosa Creek from residence area.

RELATION TO OTHER STUDIES

While this report is a 'stand-alone' document, it is intended to augment and provide context to the information contained in the *Santa Rosa Creek Headwaters Conservation Easement Baseline Documentation* (Sonoma Ecology Center in 2003) and the *Spaulding Property Enhancement Plan* (Circuit Rider Productions 2000). Hence, some of the analysis in this report refers directly back to these earlier documents, particularly the plant communities described and mapped by Circuit Rider Productions. Circuit Rider used the Wildlife-Habitat Relationships System developed by the California Department of Fish and Game and the Department of Forestry and Fire Protection.

CONSERVATION & RESEARCH STRATEGIES SUGGESTED BY THE HISTORICAL DATA

Depending on long-range management goals and funding, the following actions and approaches might be considered for Headwaters:

- Undertake a botanical survey of Chamise-Redshank and Mixed Chaparral areas to assess colonization by non-chaparral species and presence of rare species or subspecies of manzanita and other plants.
- Investigate the mature Douglas fir forest directly across Santa Rosa Creek from the residential area for evidence of logging.
- Undertake a botanical survey of the mature Douglas fir forest directly across Santa Rosa Creek from the residential area to look for the presence of rare plants.
- Consider protecting existing chaparral areas through removal of non-chaparral tree species.
- Consider preserving existing grasslands and coastal oak plant communities through removal of small to medium Douglas fir and Bay trees.
- Restore wetland area (detailed in the "Spaulding Property Enhancement Plan" by Circuit Rider Productions).
- Undertake an archaeological survey, including investigation of rock outcroppings for petroglyphs.

NOTES ON METHODS

In addition to archival research and gathering information directly from people familiar with the property, three field visits were made to Headwaters between March and May 2012. One was with Margaret Spaulding, the owner; another with Charles Mikulik, archaeology graduate student at Sonoma State University; and the third was a solo visit. The goals of these visits were to assess current conditions, look for physical clues about past conditions, and to revisit points and lines with 19th-century vegetation data recorded by early surveyors.

To get an idea of the age/size relationship of Douglas fir growing at the Headwaters, nine tree ring samples taken from stumps were counted and measured. As stumps were rotted, it was only possible to count and measure incomplete sections (none covered the full radius of a single tree). Of these samples, the average count was 3.1 years/inch of diameter, with a standard deviation of 0.8 years/inch and a range from 2.0 to 4.0 years/inch.

Some living trees were measured, as well as stumps left behind by logging. Using the estimates from the ring counts, it was possible to roughly estimate the ages of both living trees, and the age of the cut trees at the time they were harvested.

Preparing this report required integrating the field data, archival data, and oral histories into a cohesive whole.

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