WIDE AWAKE MINE:

A Forgotten Relic of California's Once-Vital Mercury Mining Industry

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Figure 1. Wide Awake Mine, as seen in the larger context of Northern California. Image credit to Google Earth.

Spring in California is a beautiful time to go hiking. Heading into the Coast Range, one will see hillsides covered in golden poppies, flowering trees in purples and pinks, and everywhere fresh green grass, all the more vibrant in comparison to the tawny golden-brown palette that dominates later in the season. Those wanting to get out and see this beautiful season have many opportunities to do so – ranging from scenic drives with frequent vista points to wilderness areas where long camping or kayaking trips are possible. As I have always enjoyed the outdoors, it is not surprising that during my spring break I took the chance to go hiking and take advantage of this wonderful season. However, this time my purpose was more than to simply enjoy the springtime – I was also seeking the Wide Awake Mine, one of dozens of barely remembered mercury mines scattered throughout California, which now has been effectively nonoperational for more than a century.

I first heard about the Wide Awake Mine from a neighbor, Robert Thayer. Rob is a California native, a former Professor of Landscape Architecture at the University of California, Davis, and an outdoor enthusiast. During his time as a professor, he participated in the UC Davis Putah-Cache Bioregion Project, which

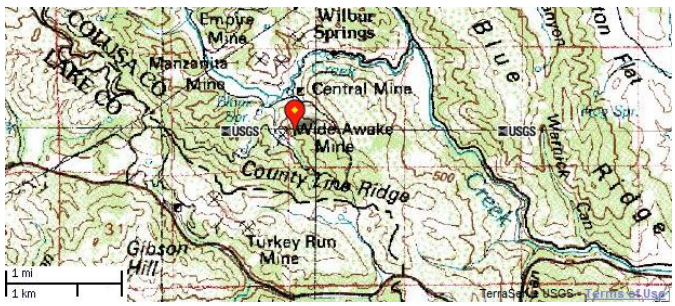

Figure 2. Topographic Map of the area surrounding Wide Awake Mine. The mine is marked with a red dot. Also, note the other mines in the area (all abandoned) and the hot springs. Image credit to Google maps and USGS.

sought to "develop foundations for community planning, resource management, and partnerships" in the Putah and Cache Creek watersheds. As part of this project, members studied regional art and literature, mapped "highly valued" areas of the region, and monitored the health of regional ecosystems (UC Davis). Naturally, the project was interested in old mining sites, both for their cultural significance and for the negative impacts they still have on the environment (Sulphur Creek, into which the runoff from Wide Awake Mine drains, has one of the highest mercury concentrations in the state, causing unknown harm to animals and plants in the area and potentially to humans relying on water or produce from anywhere downstream in the watershed) (Thayer). When I told him that I was looking for a place of archaeological interest to investigate, he immediately mentioned Wide Awake Mine, which is one of many mining sites in this area that have been abandoned and almost forgotten. Although the mine was, Rob told me, easily accessible by a hiking trail, no effort has been made to clean up the debris left behind by the miners. In fact, most of a large brick furnace is still standing, and there are stone walls and other evidence of ruined structures associated with the site. Two other neighbors also knew something about the site – Jim Eaton and David Robertson. Jim, who has worked with number of non-profit organizations dedicated to protecting California's wilderness areas, was able to suggest a few useful websites related to activities at the mine. David, another native Californian who has explored the area extensively through hiking and other outdoor activities, was able to give us excellent directions to the trailhead leading to the site. He also had a few suggestions about what particular structures might have been used for, having spent some time exploring the site himself and guiding other people there.

Before delving into the historical record of the Wide Awake Mine itself, it is important to place it within the larger context of the mercury mining industry in California. Large-scale mining of mercury (or "quicksilver," as it was called) dates back to 1846 (CA Dept. of Transportation). With the beginning of the Gold Rush two years later, mercury mining took on a new importance, as mercury could be used to increase the percent and quality of gold yielded through hydraulic mining and other techniques. Twelve percent of the mercury produced in California between 1850 and 1981 was used in California for this purpose; the rest was exported internationally or to other western states (Alpers et. al.). Altogether, more than 220 million pounds of mercury were mined in California during this period (Churchill, qtd. in Alpers et. al.). However, the mercury mining industry had largely failed long before 1981; stagnation began as early as the 1880s, and except for a brief resurgence in prices (and thus in production) during World War II, the industry declined throughout the twentieth century (CA Dept. of

Transportation). After World War II, production levels fell to almost zero – and as environmental concerns related to mercury contamination are increasingly being voiced, it is unlikely that mercury will make a comeback.

The fortunes of the Wide Awake Mine closely follow the general trends of the overall mercury market discussed above. The ruins of the Wide Awake Mine are located in the westernmost part of Colusa County, in the middle of the Coast Range. The area is somewhat geologically active; there are several hot springs nearby, some of which still today support a spa and health center (http://www.wilburhotsprings.com/). It is part of the Wilbur Springs Mining District (in Lake and Colusa Counties), a region described as a "moderate and consistent producer of mercury," yielding a total of about 56 thousand flasks (one flask = 76.5 lbs or 34.7 kg) of mercury between 1862 and 1961 (U.S. Bureau of Mines). The Wide Awake Mine was one of several properties worked intermittently in this region. It was discovered in the 1870s (the decade during which mercury production in California reached its peak) and first appeared in the producing list in 1875 as the Buckeye Mine (Hamilton). The California Annual Report of the State Mineralogist for the year 1892 lists the owner of the mine as W. H. Shellback, of San Francisco. By then the mine appeared to have fallen on hard times though; for the report stated, "No work was being done on the mine at the time of the writer's visit" (Irelan). The mine apparently remained inactive for at least four years, for no further mention of it exists until it resurfaces in the 1896 Report as the "Wide Awake Consolidated Mine" under the ownership of A.A. Gibson of Sulphur Creek. The report goes on to note that the workings of the mine are "inaccessible" but that two men "are employed repairing the shaft, with a view of resuming work" (Crawford). A later report states that the mine was indeed "reopened in 1896 and yielded a small output for a time" (Hamilton). However, the same report reveals that work had stopped by 1901, and the shaft had since filled with water. This was basically the end of mining activity at the site, except for two brief periods of work in 1932 and 1943 during which "moderate production" was reported (Bureau of Mines Staff). As of 1965, the main shaft had caved in and filled with water, and most of the other workings (shallow drifts, crosscuts, and stopes) were also inaccessible (Bureau of Mines Staff). In 1965, the owner was listed as Mrs. A.A. Gibson.

I could discover very little about the listed owners of the mine. William Shellback (presumably the first named owner of the mine) shows up in the 1880 census in San Francisco, where his occupation is listed as "teamster" (U.S. Census Bureau). He was born in California in 1852 to German parents, and at the time of the census was living in a household headed by Hermann T. Finger, presumably renting a room (all of the other inhabitants of the house were

related). It is not unreasonable to suppose that this William Shellback could have invested in a small mining property, only to sell it to one A. A. Gibson by 1896, presumably because it was failing to be profitable. When Mr. Gibson first appears, he is listed as living in Sulphur Creek, which was then a small village consisting of a "resort and [gold] mining village," but now no longer exists (http://www.wilburhotsprings.com/factsheet.htm). Later ownership records show him living in Oakland, and indeed, there is an Alex Gibson buried in the Mountain View Cemetery there (Johnson). This Mr. Gibson was born in 1863 and died in 1925; his tombstone bears the word "Husband." An Alice H. Gibson (12/8/1907 – 10/4/1927) is buried in the same plot; this may be his daughter or some other relation. Since Mrs. A. A. Gibson is listed as the property owner in 1965, we can assume that his wife outlived him significantly. There are no other people (listed) with the last name Gibson buried in the same plot; so perhaps Mrs. A. A. Gibson remarried and changed her name or simply chose to be buried elsewhere.

When visiting the site today, there is no immediately visible record of any of its owners. It is about a mile and a half from the highway, and the relatively short hike winds between picturesque hillsides. The remaining evidence of the mining activity is mostly along a small stream, which presumably supplied the miners with the water necessary for their operations. However, if that is the case, it must have been more impressive a hundred years ago than it is today; it was running low even when I visited, and will probably be completely dry by the end of the summer.

Figure 3. View approaching the mine site from the south. The stream is visible entering the picture from the lower right; it passes the furnace, the most impressive standing ruin, visible in the upper right.

I chose to study the site in two ways. First, I enlisted the help of my parents as field walkers, and the three of us did a casual unsystematic survey of the area. We used a GPS to record the (approximate) coordinates of important or interesting features, from the ends or corners of walls or fences to significant pieces of machinery (like several large pulleys) that had seemingly been left by themselves in a field. The GPS data turned out to match satellite imagery of the site fairly well; a view of the site in USGS aerial survey data overlaid with the data points is shown below, along with a table listing all of the marked waypoints and the features or artifacts to which they correspond.

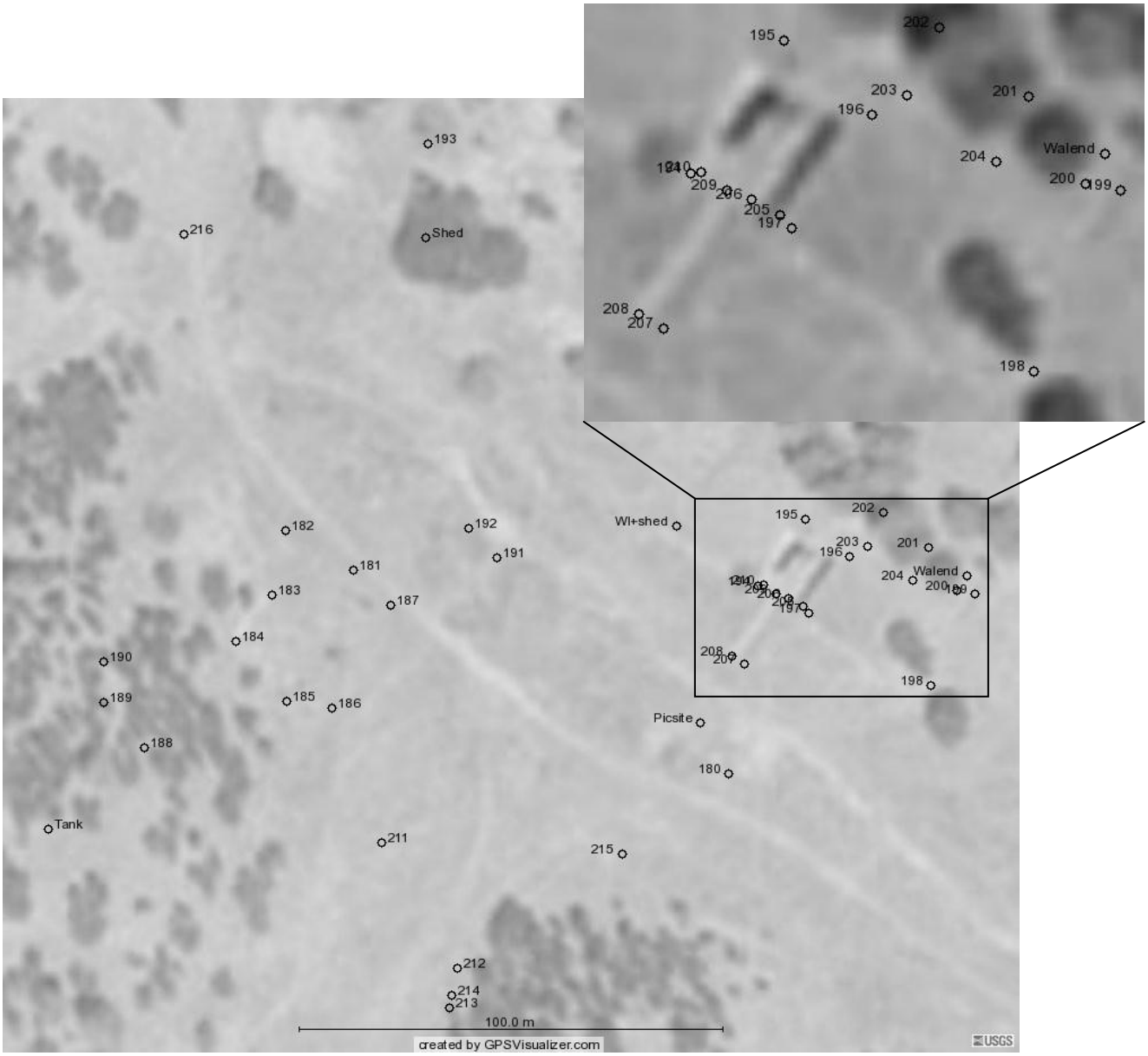

Figure 4. Aerial view of mine site, with waypoints. The points are not perfectly aligned with the imagery (see especially the blow-up), but are close enough to give a good idea of the shapes of large features of the site.

Waypoint	Associated Feature	Waypoint	Associated Feature	Waypoint	Associated Feature
Picsite	Place where picture of the furnace was taken	192	NW end of structure 2	204	See 199-203
180	Lunch spot	193	Former mine entrance	205	Outline of walls extending out from the front of the brick furnace and the passageway between them
181	Outline of fence and stone wall of structure 1; see sketch map for more precise placement of points (185 = water tank).	194	Corners of brick furnace (structure 3) and ends of associated walls.	206	
182		195		207	
183		196		208	
184		197		209	
185		198		210	
186		WI+shed		211	Iron pulleys
187		Walend	With 204, outline of walls that define structure 4, above the brick furnace (Walend = the apparent end of the wall)	212	Ends of wall of structure 5
188	Outline of a wall between structure 1 and the hilltop tank	199		213	
189		200		214	Chimney bricks
190		201		215	Cement platform
Tank	Water tank on hilltop	202		216	Structure 6
191	SE end of structure 2	203		Shed	Structure 7

As we can see from the table above, this simple unsystematic survey revealed seven major features, and a number of smaller features and artifacts. Of these features, the complex that I have called structure 1 is perhaps the most interesting; in the second portion of my study of the site, I made a more detailed scale map of it and I will discuss it in detail later. It appears to have been the building where much of the final ore processing was done, and is associated with two connected water tanks – one seemingly specifically for hot water. Just up the hill from structure 1 is another water tank, but separated from structure 1 by a wall. Perhaps the water on top of the hill was drinking water, while the water closer to the building was used in ore processing (by this logic, the drinking water was kept at a higher elevation to prevent contamination from liquids produced during the mining process and protected by a wall to prevent animals from going near it). Structure 2 consists of at least three connected brick ovens right next to the stream; it too was certainly used to process the mercury ore. The type of ore present in the Wide Awake Mine is called cinnabar; mercury is extracted from it by heating the ore, causing pure mercury to separate out and liquefy, and then collecting the liquid (Speirs). Thus, this oven was probably crucial to the process of "baking" the cinnabar.

Figure 5. Structure 2: in its entirety (above) and close-up of two of its ovens (below).

Figure 6. Structure 3, the furnace. Note the human figure in the top image for scale.

Structure 3 is the most easily the impressive feature of the site. A giant brick furnace, it played a key role in reducing the ore extracted from the mine. Its importance is such that it is the only specific piece of equipment mentioned in the section of the 1913 State Mineralogist Report on the Wide Awake Mine; in this report, it is named as a "24-ton Scott

Figure 7. Close-up of one of the furnace's ovens, imprinted with the name of the manufacturer: "Golden State & Miners Iron Works."

Figure 8. A typical brick from the furnace, stamped with the trademark of W.B.I. & Co.

fine-ore furnace" (Hamilton). The furnace is surprisingly well preserved, with nearly all of its individual ovens intact. The ovens are stamped with the name "Golden State & Miners Iron Works," revealing the company that built at least the iron parts of the furnace. The individual bricks all appear to be stamped with the trademark "RAVENS W.B.I. & Co." This is the trademark of W.B.I. and Company, a brick-making company based in Dewsbury, Yorkshire, England (Mosier). Thus, we learn the interesting fact that the bricks for the furnace were imported from England. The furnace is the most sophisticated piece of equipment at the site; thus, it is quite possible that it postdates structure 2 and replaced it entirely after its construction.

The other structures at the site are less impressive. Structure 4 is located just above the furnace, higher on the hillside where the mining actually took place, and is merely a grouping of stone walls that may have marked the outlines of a small building. Alternately, they may have been related to the processing occurring at the Scott furnace. Across the creek from the furnace is what appears to be merely a concrete platform abutted by a wall – however, the setup is such that this is unlikely to have been an actual building. In contrast, structure 5, across the valley from the furnace, appears to have been a small house. One wall is still reasonably well defined, and a pile of bricks (different from those that form the furnace) marks what could have been a chimney.

Figure 9. The remains of structure 5 – a straight line of stones and a pile of bricks that may have been a chimney.

Figure 10. Structure 6.

This may have been where some of the miners lived while the mine was operative. Structure 6 is a fairly impressive wooden structure located downstream from the rest of the complex, and was probably involved in processing the ore. Structure 7 is a collapsed, small wooden shed that may have been used to store supplies. In addition to these major features, the entire landscape is littered with bits and pieces of machinery, ranging from pipes of all sizes to giant pulleys. Rather than attempting to map the entire area, I decided it would be more beneficial to map a smaller section – namely the interesting location once filled by structure 1.


Figure 11. Structure 7.


Figure 12. Structure 1 and surrounding area.


Figure 13. Flowers growing along the fence – planted while structure 1 was inhabited?

Structure 1 is unique among the features of the site in a number of ways. Of the various structures discussed above, it is the most likely to be an actual building, rather than a shed or a structure solely used in the mining process. Partial remnants of stone walls mark a modest-sized building and a chain link fence with a nice gate facing the hill connects to the walls to form a decently-sized yard. A row of "garden" flowers (daffodils and tulips) still blooms along one line of the fence – such an arrangement is unlikely to be natural, so it seems that someone must have cared enough about the place to attempt to make it

look nicer. Thus, at first I thought that it could have been a residence of some sort. However, if it was a residence, then it

Figure 14. Inside structure 1. Note the sheet metel, the barrels, and the two stoves. Also, note the charred post – is this evidence that the house once burned down, leaving only the stone foundation we see today?

was still a residence in which some mining activities took place. Inside the building, I found two identical stoves, pipes that could have been for plumbing, and numerous rusted barrels. The stoves especially seem more like mining equipment than the single stove that a family might hope to have on a homestead. Speirs tells us that such techniques were not uncommon; local residents of a mining area such as this one often brought home cinnabar rocks, crushed them, and heated them to extract the mercury. In fact, this method may have continued even after full-scale mining operations at the site ended. Both stoves have a patent date stamped on the back – thus, we know that they must have arrived at the site after December 22, 1908. However, written records tell us that mining at the site had effectively ceased by 1901 – so whoever was living or working at the site was not working the mine to any significant degree. We remember that the owner at this time was Mr. A. A. Gibson, of Sulphur Creek. Since the village of Sulphur Creek was so close to this mining claim (the location of the mine is described as "a short distance from the post office and south of the creek"), it is quite possible that he actually lived on the claim, and that structure 1 was actually his house. I did not see any personal items or furniture such as one might expect to find in an inhabited house, but this could be explained by the fact that we know he moved to Oakland before his death, presumably taking most or all of his belongings with him. Excavation (particularly of the mysterious, grass-covered mound in the middle of what was once the house interior) might reveal more about the use of the structure, but for now, the site is probably best left as it is.

Figure 15. Grassy mound in the middle of structure 1. Several pipes found around edge of mound, but no clues on the surface about what might be inside.

Figure 16. Pottery sherd found in structure 1. The sherd appears to be part of a plate, perhaps used for eating meals. This may imply more permanent habitation than just a mining facility.

By 1920, according to the Report of the State Mineralogist for that year, Mr. Gibson had moved to Oakland. Two brief periods of mining followed in 1932 and 1943, but other than that, the property has presumably been unoccupied and has fallen into disrepair. According to Rob Thayer, the official status of the property is currently in limbo – right now it is public land (partially because it is highly contaminated with mercury, and no one wants to own such land and be held responsible for cleaning it up), but there is a chance it could go back to private ownership in the future. Unless the price of mercury goes back up dramatically, it is unlikely that the mine will ever be reopened. However, since it is located in a beautiful spot, the remains of Wide Awake Mine are becoming an increasingly popular hiking destination. In the spring, it is a beautiful place to see wildflowers, and the area is rich in wildlife. One does have to remember to be careful when poking around the site though – my dad saw two rattlesnakes! (However, I only saw a few lizards and a couple of birds.) While out doing archaeological reconnaissance we ourselves used the mine site as a picnic spot – and we ran into a couple of other people out enjoying the hike too. In fact, in structure 1 there is even evidence that the area has been used as a picnic spot for years, if not decades – one of the items I discovered was a rusted metal Tang can. This indicates human use of the site more recently than 1957, when Tang was invented (Olver). Even more recently, the site has been incorporated into the increasingly popular sport of geocaching, in which players hide geocaches, post their exact coordinates online, and then use a GPS to go out and find other people's hidden geocaches. To my surprise, one of these geocaches had been hidden in the wall of the Scott furnace – certainly not a use to which the miners of a hundred years ago could have ever imagined it being put. Yet even as the site becomes increasingly popular as "a particularly nifty hike for amateur archaeologists and those into scavenging," (as the description for the Wide Awake Mine geocache puts it), its actual history is becoming steadily murkier as local sources of information dry up (www.geocaching.com).

Figure 17. The Tang can.

The Wide Awake Mine is part of a fascinating chapter in California's history that is all too quickly being forgotten. With tens of thousands of abandoned mines in California, it would be impossible to do a detailed archaeological study of all of them, yet a representative survey project would undoubtedly prove extremely interesting. Yet the question of whether or not abandoned mines should qualify as archaeological sites and be protected as such is complicated by another factor – environmental contamination. Chemicals washing out of abandoned mines like the Wide Awake Mine can still have terrible impacts on the environment, even more than a century after those mines have ceased production. Mercury can be incredibly harmful to animals and humans alike, and the runoff from the streams around Wide Awake Mine has been found to have some of the highest mercury concentrations in the state of California. So then, the question becomes what should we do about this? Can we do anything about this? Mercury contamination is incredibly persistent and hard to clean up, so it is unclear how much any amount of effort can help. Still, it may be hard to make the argument that archaeology of mining sites is more important than protecting the lives and healthiness of people living downstream. Archaeologists wanting to excavate a mining site would have to take extra precautions to not release more mercury (or any other contaminant found at the site) into the environment, and conversely, they would also have to make sure that preserving a particular site instead of cleaning it up wouldn't lead to an unhealthy level of pollutants in the local environment. Until the state of California has the time and the resources to adequately address this issue, the best approach for archaeologists wishing to study mining sites in California may be one similar to the approach I took for this project – to rely heavily on local and archival evidence, and to perform surface surveys rather than excavations.

Works Cited

Alpers, Charles N. "Mercury Contamination from Historical Gold Mining in California." U.S. Geological Survey. November 2005. 14 April 2009. <http://pubs.usgs.gov/fs/2005/3014/>.

Bureau of Mines Staff. "Mercury Potentials of the United States." Washington: United States Department of the Interior, Bureau of Mines, 1965. Available online in two parts: <http://www.admmr.state.az.us/DigitalLibrary/USBM_IC/USBMIC8252MercuryPart1of2.pdf>, <http://www.admmr.state.az.us/DigitalLibrary/USBM_IC/USBMIC8252MercuryPart2of2.pdf>.

California Department of Transportation. "A Historical Context and Archaeological Research Design for Mining Properties in California." Division of Environmental Analysis, California Department of Transportation, Sacramento, CA. 2008. Available online at: http://www.scribd.com/doc/11067248/A-Historical-Context-Archealogical-Research-Design-for-Mining-Properties-in-California.

Crawford, J. J. (California State Mining Bureau). *Thirteenth Report (Third Biennial) of the State Mineralogist, for the Two Years Ending September 15, 1896.* Sacramento: Superintendent State Printing, 1896. Digitized by Google. <http://books.google.com/books?id=sFYQAAAAIAAJ&pg=PA159&lpg=PA159&dq=W.+H.+Martin,+Crocker+Building,+San+Francisco&source=bl&ots=Ytas1CcE7I&sig=nlCw9HHRGCypxffTCYtCzBUJLxM&hl=en&ei=IIjhSYXZPNXelQfX9cngDg&sa=X&oi=book_result&ct=result&resnum=2#PPR3,M1>.

Eaton, Jim. "Re: Wide Awake Mine." Email to the author. 30 March 2009.

Eddie Bow-wow. "California Eddie & The Temple of Doom." 27 March 2009 <http://www.geocaching.com/seek/cache_details.aspx?guid=7981fa39-1d25-49ff-97e3-157457887ca5>.

Hamilton, Fletcher (California State Mining Bureau). *Report XIV of the State Mineralogist: Mines and Mineral Resources of Portions of California – Chapters of State Mineralogist's Report, Biennial Period 1913-1914.* Sacramento: California State Printing Office, 1916. Digitized by Google. <http://books.google.com/books?id=MhcTAAAAYAAJ&pg=PR1&lpg=PR1&dq=Report+XIV+of+the+State+Mineralogist+-+Mines+and+Mineral+Resources+of+Portions+of+California,+Chapters+of+State+Mineralogist%27s+Report+-+Biennial+Period+1913-

1914,+Part+II.&source=bl&ots=N2KFW0I5Nd&sig=NY9iLc1TPTma7Ocicm4SFXR386o&hl=en&ei=rJrMSbPcEomMsAPFpvmlCg&sa=X&oi=book_result&resnum=10&ct=result#PPR1,M1>.

Hamilton, Fletcher (California State Mining Bureau). *Report XVII of the State Mineralogist: Mining in California During 1920.* Sacramento: California State Printing Office, 1916. Digitized by Google. <http://books.google.com/books?id=hwsTAAAAYAAJ&pg=PA307&dq=Report+XI+of+the+State+Mineralogist++By+California+State+Mining+Bureau#PPP5,M1>.

Hanks, Henry G. (California State Mining Bureau). "Quicksilver." *Annual Report of the State Mineralogist from June 1, 1880 to December 1, 1880.* University of California, Berkeley Library, Digitized by Google. <http://books.google.com/books?id=Aeu3AAAAIAAJ&pg=PA36&dq=inauthor:%22California+State+Mining+Bureau%22&lr=#PPA1,M1>.

"Individual Record: William Shellback." *FamilySearch.org.* 2008. The Church of Jesus Christ of Latter-day Saints. 11 April 2009. <http://www.familysearch.org/Eng/Search/Census/individual_record.asp?indi_code=1880US_4400061_8&lds=5&region=0&regionfriendly=1880+US+Census&frompage=99>.

Irelan, Jr., WM. (California State Mining Bureau). *Tenth Annual Report of the State Mineralogist, for the Year Ending December 1, 1890.* Sacramento: Supt. State Printing, 1890. Digitized by Google. <http://books.google.com/books?id=TwsTAAAAYAAJ&printsec=frontcover&dq=Report+of+the+State+Mineralogist++By+California+State+Mining+Bureau#PPA1,M1>.

Irelan, Jr., WM. (California State Mining Bureau). *Eleventh Report of the State Mineralogist, (First Biennial) Two Years Ending September 15, 1892.* Sacramento: Supt. State Printing, 1893. Digitized by Google. <http://books.google.com/books?id=JlQQAAAAIAAJ&pg=PA18&lpg=PA18&dq=california+report+of+the+state+mineralogist&source=bl&ots=IeIfpykHFU&sig=XxEheMysRcu-3AK1r-8R8x2agJs&hl=en&ei=ZqTiSY-zGJ3glQfC64HgDg&sa=X&oi=book_result&ct=result&resnum=5#PPA1,M1>.

Johnson, David. "Mountain View Cemetary Ga-Gr." *Alameda County, California Archives.* 8 August 2006. USGenweb Project. 10 April 2009. <http://files.usgwarchives.net/ca/alameda/cemeteries/mtvview-g1.txt>.

Mosier, Dan. "Imported and Out Of State Bricks: Ravens." *California Bricks.* Mines Road Books. 13 April 2009. <http://calbricks.netfirms.com/brick.ravens.html>.

Olver, Lynne. "The Food Timeline: popular American decade foods, menus, products and party planning tips." *The Food Timeline.* 12 April 2009. 15 April 2009. <http://www.foodtimeline.org/fooddecades.html#tang>.

Robertson, David. Personal Interview. 26 March 2009.

Speirs, Bob. "Downstream: How Mercury Travels." *Putah and Cache: A Thinking Mammal's Guide to the Watershed.* 2001. University of California, Davis. 25 March 2009. <http://bioregion.ucdavis.edu/book/09_McLaughlin_Mine/09_02_speirs_downstream.html>.

Thayer, Robert. Personal Interview. 27 March 2009.

Thayer, Robert. "Wilson Valley to Cache Creek." *Putah and Cache: A Thinking Mammal's Guide to the Watershed.* 2001. University of California, Davis. 25 March 2009. <http://bioregion.ucdavis.edu/book/11_Upper_Cache_Creek/11_01_circ_wilson.html>.

"Wide Awake Mine, (in Colusa County, CA.)" CA HomeTownLocator. 12 April 2009. <http://california.hometownlocator.com/maps/feature-map,ftc,2,fid,237726,n,wide%20awake%20 mine.cfm>.

Wilbur Hot Springs. 14 April 2009. <http://www.wilburhotsprings.com/factsheet.htm>.

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