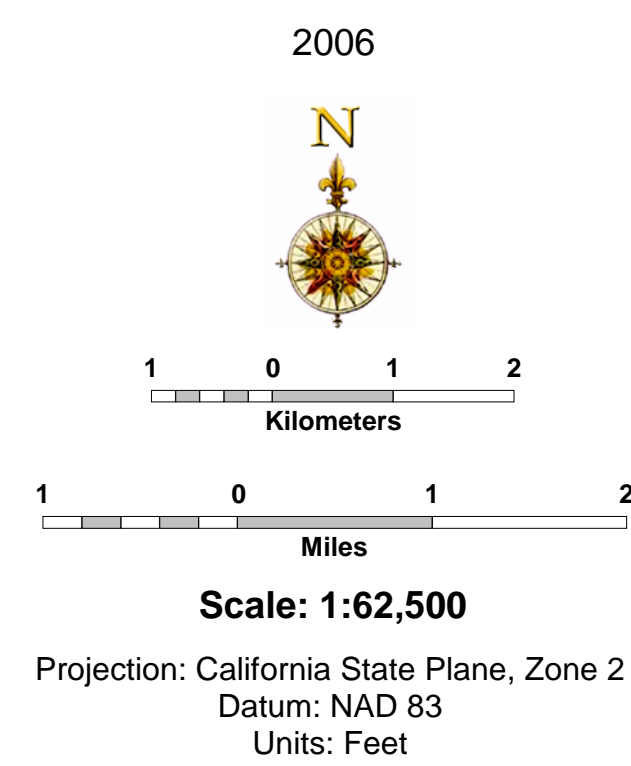


RELATIVE LIKELIHOOD FOR THE PRESENCE OF NATURALLY OCCURRING ASBESTOS IN EASTERN SACRAMENTO COUNTY, CALIFORNIA

By
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RELATIVE LIKELIHOOD FOR THE PRESENCE OF NATURALLY OCCURRING ASBESTOS IN EASTERN SACRAMENTO COUNTY

Natural occurrences of amphibole asbestos are known to be present in some parts of eastern Sacramento County. On this map, the eastern part of the county is divided into areas according to the relative likelihood for the presence of naturally occurring asbestos (NOA) in different geologic units. The presence of faulting or shearing may locally increase the likelihood for the presence of NOA in some geologic units. The presence of NOA is possible within all of these areas, but it is more likely to be present in some areas than others.

This map is based on compilation and interpretation of geologic data from various published and unpublished sources available at the time of the study. Users are encouraged to read the accompanying report for further details about this map.

This map should not be used to determine the presence or absence of NOA at specific sites in the county. Determination of whether NOA is present or absent at a specific site will require a detailed geologic investigation of that site.

Areas of Relative Likelihood for the Presence of NOA

- Areas Most Likely to Contain NOA:** These areas include ultramafic rock and serpentinite (serpentine rock), and associated soils, which are most likely to contain NOA. Such areas are not known to be present in eastern Sacramento County at this time and thus do not appear on this map.
- Areas Moderately Likely to Contain NOA:** These areas include those metamorphic and igneous rocks that are moderately likely to contain NOA.
- Areas Least Likely to Contain NOA:** These areas include those metamorphic, igneous, and sedimentary rocks that are least likely to contain NOA.
- Areas of Faulting or Shearing:** These areas are zones of faulted or sheared rock that may locally increase the relative likelihood for the presence of NOA within or adjacent to areas moderately likely to contain NOA. The solid lines represent mapped traces of fault and shear zones.

EXPLANATION OF THE AREAS OF RELATIVE LIKELIHOOD FOR THE PRESENCE OF NOA

This section provides more information on the characteristics of each of the NOA areas shown on the map of eastern Sacramento County. Additional details are presented in the report that accompanies this map.

Areas Moderately Likely to Contain NOA:

These areas contain one or more of the following rock types: metamorphosed mafic volcanic rocks, metamorphosed intrusive rocks, and mafic intrusive rocks. Geologic units in eastern Sacramento County composed predominantly of metamorphosed mafic volcanic rocks include the Copper Hill volcanics and Gopher Ridge volcanics. The intrusive rocks in the map area are not assigned to any named geologic unit.

The rocks in these areas generally have a higher relative likelihood for the presence of NOA than those in the areas described as least likely to contain NOA. NOA is known to be present in these rock types either in eastern Sacramento County or in similar rocks in nearby counties. The most likely settings for NOA in these rocks are in fault zones and shear zones that contain slivers of serpentinite and/or high concentrations of the minerals talc and chlorite. Statewide, both chrysotile asbestos and amphibole asbestos are known to occur in such environments.

Areas Least Likely to Contain NOA:

These areas contain one or more of the following rock types: metamorphosed sedimentary rocks, granitic rocks, volcanic rocks, sedimentary rocks, unconsolidated alluvium, and dredge tailings associated with gold mining. The geologic unit in eastern Sacramento County composed predominantly of metamorphosed sedimentary rocks is the Salt Spring slate. The granitic rocks are part of the Rocklin and Penryn Plutons. The volcanic rocks include the Mehtren Formation and Valley Springs Formation. The sedimentary rocks include the Chico Formation, Ione Formation, Laguna Formation, Turlock Lake Formation, South Fork Gravels, Riverbank Formation, and Modesto Formation.

The published technical documents reviewed during compilation of this map do not indicate the presence of NOA in any of these rock types within eastern Sacramento County. One unpublished consulting report indicated the presence of trace levels of NOA in a few samples of rocks identified as metamorphosed sedimentary rocks.

Based on the available information, the relative likelihood for the presence of NOA in these areas is lower than that in areas identified as moderately likely to contain NOA. Small bodies of rock or soil with moderate or higher likelihood for the presence of NOA may occur within some of these areas, but they remain undiscovered or are too small to depict on this map.

Areas of Faulting or Shearing:

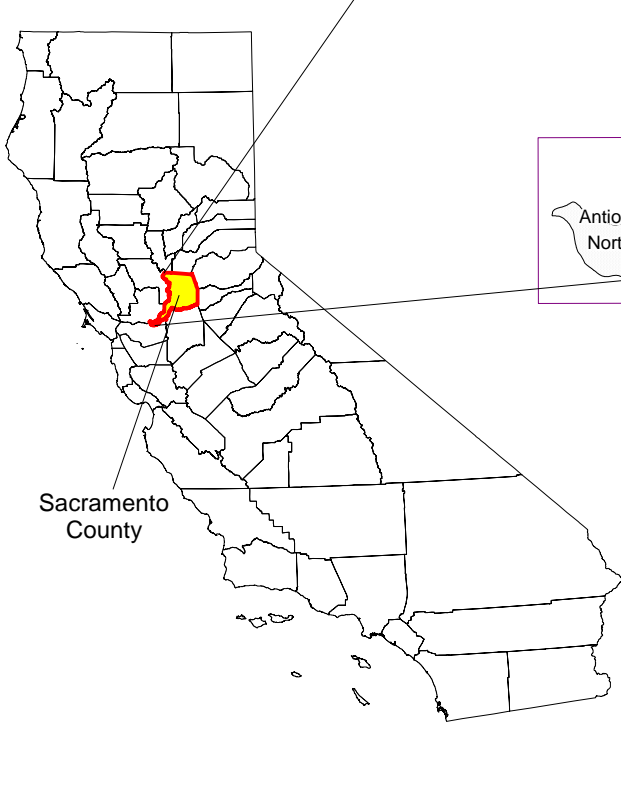
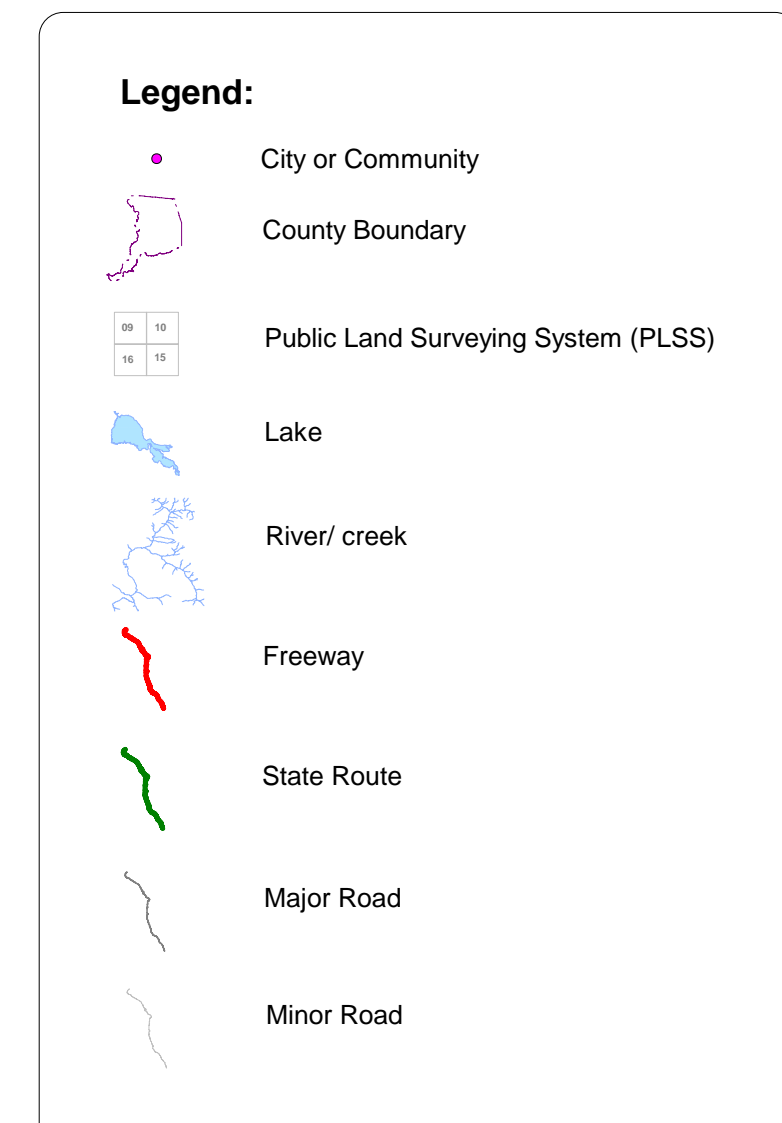
Eastern Sacramento County contains a few known fault and shear zones, which are potentially favorable environments for the presence of NOA. These are linear belts of fractured and deformed rocks, highlighted by stippling on the map where they overlap areas moderately likely to contain NOA. These areas may have an increased likelihood for the presence of NOA beyond that of the underlying area.

The stippling on the map is intended to draw attention to these areas as localities with increased likelihood for the presence of NOA above that of unfaulted or unshattered areas. For example, an area of faulting or shearing shown within an area mapped as moderately likely to contain NOA would be expected to have a higher relative likelihood for the presence of NOA than that of the moderately-likely area by itself. The widths of the stippled areas shown on the map are not intended to precisely depict the actual width of a fault or shear zone at any particular location. Fault zones in the Sierra Nevada Foothills are seldom less than two hundred feet wide and may be several thousand feet wide or more. The width of a fault zone commonly varies along its length. Detailed information on the width of fault zones is largely unavailable for eastern Sacramento County.

NOA in Other Geologic Environments

NOA can be associated with many different rock types in a variety of geologic environments. The geologic environments for NOA discussed on this map are those known or strongly suspected to contain NOA in eastern Sacramento County. The research for this mapping project did not reveal occurrences of NOA in other geologic settings in the county. However, the possibility that additional occurrences will be discovered in the future cannot be ruled out. These less-common possibilities for the presence of NOA are discussed in the accompanying report.

Grays Bend	Taylor Monument	Rio Linda	Citrus Heights	Folsom	Clarksburg
				1, 5, 6, 7, 8, 9	1, 3, 7, 9
Sacramento West	Sacramento East	Carmichael	Buffalo Creek	Folsom, SE	
				1, 5, 7, 10	1, 3, 4, 5, 7, 9
Clarksburg	Florin	Elk Grove	Sloughhouse	Carbondale	
				2, 5	2, 3, 4, 5
Rio Vista	Isleton	Thomson	Lodi North	Lockeford	
Antioch North	Jersey Island	Bouldin Island			Goose Creek



California Geological Survey (CGS) Web Site: <http://www.consrv.ca.gov/cgs>

USE AND LIMITATIONS OF MAP

Amphibole asbestos is known to occur in eastern Sacramento County. Other varieties of NOA may also be present within the county.

The purpose of this map is to provide information to local, state and federal agencies, and the public as to areas where naturally occurring asbestos is most likely to be found in eastern Sacramento County. This information includes locations of major mapped faults and fault zones, as well as certain rock types with potential for containing naturally occurring asbestos.

This map is based on a compilation of geologic data from various published and unpublished sources available at the time of the study. These sources are identified on the map and in the accompanying report. This map is also based on limited geologic fieldwork by staff of the California Department of Conservation, California Geological Survey.

The scale of this map is 1:62,500 (one inch = 1 mile). This map is intended for use in conjunction with the companion report. The report provides detailed information on the underlying geologic assumptions for the map, map compilation procedures, map accuracy, and guidance on map usage and limitations.

This map should not be used to determine whether bedrock or soil on a particular parcel of land contains naturally occurring asbestos. A detailed site-specific investigation is required to make such a determination.

INDEX TO U.S. GEOLOGICAL SURVEY 7.5-MINUTE QUADRANGLES AND TO GEOLOGIC MAPPING USED FOR COMPILATION OF THIS MAP

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- Wagner, D.L., Jennings, C.W., Bedrossian, T.L., and Bortugno, E.J., 1981, Geologic map of the Sacramento Quadrangle, California. California Department of Conservation, Division of Mines and Geology Regional Geologic Map Series, Map No. 1A, scale 1:250,000.

FRAMEWORK DATA

Base map data for hydrography were provided by Sacramento Area Council of Governments Mapping Center and U.S. Geological Survey; roads by Sacramento Area Council of Governments Mapping Center; Public Land Survey (PLSS) by California Department of Conservation, Division of Oil, Gas, and Geothermal Resources; and political boundaries by California Department of Forestry and Fire Protection.

Cartographic design and GIS development by Milton Fonseca

DISCLAIMER

The State of California and the California Department of Conservation, California Geological Survey make no representations or warranties as to the actual presence or absence of natural asbestos at specific sites. Further, the State and the Department make no representations or warranties regarding the accuracy of the data from which these maps were derived. Neither the State nor the Department shall be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map.



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