APPENDIX F

Cultural Resources Report

PRELIMINARY PALEONTOLOGICAL RESOURCES ASSESSMENT:

LITERATURE AND RECORDS REVIEW FOR THE MASTER STORMWATER SYSTEM MAINTENANCE PROGRAM, COUNTY OF SAN BERNARDINO, CALIFORNIA

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EXECUTIVE SUMMARY

The San Bernardino County Flood Control District and the County of San Bernardino Department of Public Works (hereinafter collectively referred to as the "County" or "District") are developing a program to conduct long-term maintenance activities at approximately 500 County-maintained flood control facilities as part of the Master Storm Water System Maintenance Program (Program) located throughout San Bernardino County, California. The Program must comply with the California Environmental Quality Act (CEQA) and the cultural resources guidelines of the County's General Plan.

The District has conducted recurring maintenance activities at all flood-control facilities during the last 10 to 30 years. Approximately 7 years ago, the U.S. Army Corps of Engineers and the California Department of Fish and Wildlife began requiring the District to obtain federal and state permits to conduct any future maintenance activities, which has triggered the current permit application and environmental review process for the Program. The past and ongoing maintenance activities are now considered part of the Program and have possibly impacted or have the potential to impact significant nonrenewable paleontological resources.

At the request of the County, Dudek prepared this assessment to identify potential impacts to paleontological resources and to develop mitigation measures to avoid, reduce, or mitigate potential impacts to resources for the purpose of complying with CEQA and local regulations. The scope of work for this assessment included a review of the mapped geologic units at the facilities, an impact analysis, and the recommendation of mitigation measures. No fieldwork was conducted during this study.

Facilities are described as either those with manufactured/concrete substrate or those with earthen substrate. Only those earthen substrate facilities that are underlain by potentially fossiliferous sediments where new excavation is planned would require further evaluation. This report categorically excludes those facilities or channels with a manufactured/concrete substrate or those earthen substrate facilities where only previously disturbed sediments (non-native) will be impacted by planned maintenance activities from consideration since maintenance and cleaning operations will not encounter or impact native soils or sediments. Native soils are those that have not been previously disturbed, and are intact sedimentary deposits. An example of a non-native deposit would be artificial fill. This report focuses on channels and spreading or detention basins that have earthen substrate and earthen walls.

Mechanized land clearing/excavation in native and previously undisturbed sediments of the latest Pleistocene and older ages (9,500 years) (Bell and others, 2004) may encounter and impact significant, nonrenewable paleontological resources. These limited excavations require facility-specific paleontological review. Routine maintenance activities that only impact previously disturbed sedimentary deposits are exempt from further paleontological resources evaluation. If the potential exists for the maintenance activity to impact paleontological resources, a facility-specific paleontological resource impact mitigation program must be developed and put into effect during the program. A paleontological resources impact mitigation program includes construction monitoring, specimen collection and removal, collection of fossiliferous sediment, and screen-washing to process for recovery of small to microscopic vertebrate fossils, preparation of fossils to reduce volume and the cost of storage, a repository agreement with an established accredited museum, and a report of findings for the repository and the District.

The results of the geologic map review and literature review indicate that earthen-bottom facilities and channels require a field inspection and resource survey as a preliminary step toward developing a facility-

specific paleontological resource impact mitigation program, if the scope of work extends beyond the limits of previous disturbance. According to the San Bernardino County Museum, latest Pleistocene sediments with potential to contain fossils are known to underlie the Holocene alluvium and have yielded vertebrate fossils during excavation. This review suggests that earthen-bottom facilities and channels developed in areas mapped as post-Pleistocene, Holocene alluvium will not contain paleontological resources in a meaningful stratigraphic context, and therefore, will require no further action with regard to paleontological resources evaluation or mitigation

1.0 INTRODUCTION

1.1 PROPOSED PROGRAM AND LOCATION

The San Bernardino County Flood Control District and the County of San Bernardino Department of Public Works (hereinafter collectively referred to as the "County" or "District") plan to conduct long-term maintenance activities at approximately 500 flood control facilities located throughout the County as part of the Master Storm Water System Maintenance Program (Program). The Program must comply with the California Environmental Quality Act (CEQA) and the cultural resources guidelines of the County's General Plan.

All of the facilities have undergone recurring maintenance activities conducted by the District over the past 10 to 30 years. Some of this maintenance was conducted in sediments with the potential to contain paleontological resources.

The County flood-control facilities occur in six zones within particular geographical areas or watersheds across the County (**Figure 1**, *Regional Map*, and **Figure 2A***, Facilities Map – Index*). Not all of the named facilities in the major systems are operated by the County, nor does the County intend to perform maintenance services in all of the facilities it operates. The six zones are described below.

Zone 1 covers the southwestern portion of the County, south of the San Gabriel Mountains and extending southwest from Beech Avenue in the City of Fontana west to the Los Angeles County line (**Figure 2B***, Facilities Map – Zone 1*). This includes the Cities of Chino, Chino Hills, Fontana, Montclair, Ontario, Rancho Cucamonga, Upland, and the community of Etiwanda. Zone 1 drainages include the San Antonio Creek system, the West Cucamonga Creek system, the Cucamonga Creek system, the Alta Loma area system, the Deer Creek system, the Day Creek system, the Etiwanda Creek system, and the San Sevaine Creek system. Most watershed facilities drain directly into the southern Santa Ana River and the Prado Dam, except for those in the flat-lying areas of the cities of Ontario and Chino. Zone 1 covers 275 square miles.

Zone 2 covers the central area of the San Bernardino Valley, draining both the San Gabriel and San Bernardino Mountains, and including the drainages of the central Santa Ana River, Cajon Wash, Lytle Creek, City Creek, and Reche Canyon drainages. It lies east of Zone 1, south of Zone 5, and west of Zone 3 (**Figure 2C***, Facilities Map – Zone 2*). This includes the Cities of Colton, Fontana, Grand Terrace, Highland, Loma Linda, Redlands, Rialto, and the unincorporated communities of Bloomington, Del Rosa, Devore, and Muscoy. Zone 2 covers 318 square miles.

Zone 3 covers the eastern portion of the San Bernardino Valley, east of Zone 2 including the Cities of Highland, Loma Linda, Redlands, San Bernardino, Yucaipa, and Mentone (**Figure 2D***, Facilities Map – Zone 3*). This zone is associated with the uppermost drainages of the southern San Bernardino Mountains, Bear Creek, Mill Creek, Oak Glen Creek, and San Timoteo Canyon. Zone 3 covers 366 square miles.

Zone 4 is located north of the San Gabriel and San Bernardino Mountains and includes the Mojave River drainage running from the San Bernardino Mountains through Victorville, Barstow, and to its termination at the north end of Soda Lake at Baker. Also included in Zone 4 is the Sheep Creek drainage area west of the Mojave along the far western margin of the County (**Figure 2E***, Facilities Map – Zone 4*). This area includes Adelanto, Apple Valley, Barstow, Hesperia, Victorville, and all or portions of the unincorporated communities of Baker, Baldy Mesa, Daggett, Desert Knolls, El Mirage, Helendale, Hinkley, Hodge, Lenwood, Oro Grande,

Newberry Springs, Phelan, Piñon Hills, Silver Lakes, Spring Valley Lake, Wrightwood, and Yermo, located in the Mojave River watershed region between Los Flores south of Hesperia and Soda Lake at Baker. Zone 4 covers 1,783 square miles.

Zone 5 includes the mountainous watershed of the Mojave River on the crest and north slopes of the San Bernardino Mountains. Drainages in Zone 5 include Horsethief and Little Horsethief Canyons, West Fork Mojave River, Miller Canyon, Dogwood Creek, and the Deep Creek drainage that runs from Mojave Narrows to Keller Peak. This area includes the communities of Arrowbear Lake, Blue Jay, Cedar Glen, Crestline, Green Valley Lake, Lake Arrowhead, Lake Gregory, Rimforest, Running Springs, Silverwood Lake, Skyforest, Snow Valley, and Twin Peaks (**Figure 2F***, Facilities Map – Zone 5*). Zone 5 covers 163 square miles.

Zone 6 includes the remainder of the County that is not within Zones 1 through 5. Western Zone 6 is east of Kern County and contains the basins at El Mirage, Cuddeback, Superior Valley, and Searles Lake, with the communities of Trona and Kramer. Central Zone 6 contains northern basins along the Garlock fault, Coyote Lake, and the Fort Irwin complex. South central drainage basins include Bear Creek and the communities around Big Bear and Baldwin Lakes. Eastern Zone 6 contains the Shadow Valley, Ivanpah and Kelso drainages, the Bristol-Cadiz-Danby trough playas, Piute Wash that drains to Needles, and the valleys of Ward, Chemehuevi, and Vidal. The high desert of zone 6 includes the drainage flowing east from Copper Mountain to the Twentynine Palms Marine Base, the Yucca Valley drainage flowing into Copper Basin and the west flowing Morongo drainage (**Figure 2G***, Facilities Map – Zone 6*). Zone 6 includes the communities of Needles, Yucca Valley, and Twentynine Palms, with the unincorporated communities of Amboy, Joshua Tree, Lucerne Valley, and Morongo Valley. Zone 6 covers 17,200 square miles.

1.2 SCOPE OF STUDY AND PERSONNEL

Dudek conducted a paleontological resources literature and map assessment to identify areas of potential impacts to paleontological resources and to develop mitigation measures to avoid, reduce, or mitigate potential impacts to paleontological resources to comply with CEQA and local regulations. The scope of work for this assessment included a review of the 500 facilities, an analysis of potential impacts, and development of recommendations for mitigation measures that would reduce potential impacts to a less-than-significant level.

Personnel involved in this assessment included Sarah Siren, Dudek senior paleontologist, who served as project manager and primary author of this report. Robert E. Reynolds conducted the paleontological literature and records search and the geologic map review and provided paleontological content for the report. Resumes of key personnel are provided in Appendix A.

1.3 PROGRAM DESCRIPTION

The County proposes to continue to conduct long-term maintenance activities at approximately 500 County flood-control facilities (e.g., spreading grounds, storm drains, levees, dikes, dams, basins, channels, rivers/creeks) located throughout San Bernardino County, California. The number and types of maintenance activities to be conducted at a given facility will vary depending on need. Some of the proposed activities may have the potential to impact paleontological resources. Facility type descriptions are provided in Section 1.3.1, and the maintenance activity type descriptions are provided in Section 1.3.2.

1.3.1 Facility Type Descriptions

Facilities are segregated into two general categories: those with manufactured/concrete bases (hard-bottom) and walls, and those with earthen substrates (earthen-bottom or soft-bottom).

Channels – Hard Bottom Facilities

Concrete Channel – Rectangular: These channels have concrete sides and bottoms. The sides are at a 90° angle to the bottom of the channel. The facilities generally have chain-link fencing at the tops of the banks to keep people, wildlife, and debris out of the channel. Regular maintenance includes graffiti and debris removal. Rectangular concrete channels are generally free of vegetation. When there is a buildup of sediment, emergent vegetation can become established and must be removed to maintain the conveyance capacity of the channel.

Concrete Channel – Trapezoidal: These channels have concrete sides and bottoms. The sides are sloped typically at a 45° angle from the bottom. Regular maintenance of the facilities includes graffiti and debris removal. Trapezoidal concrete channels are generally free of vegetation. When there is a buildup of sediment, emergent vegetation can become established.

Culverts: Culverts are constructed of cylindrical or box metal pipe or concrete to allow flows to pass a short distance under roads and levees. Maintenance includes graffiti and debris removal.

Underground Concrete System: This system has construction similar to that of rectangular concrete culverts, but is an underground system rather than a culvert that connects two channels. Maintenance activities generally consist of keeping entrances and outlets clear of debris.

Storm Drains: Storm drains are generally underground pipes that merge with underground concrete systems and outlet to a basin or channel. Some are aboveground ditches. Maintenance activities generally consist of keeping entrances and outlets clear of debris. Storm drain entrances and outlets generally are covered by grates, also called trash racks, to collect trash and debris. Occasionally, maintenance removes sediment from the junction of the basin with the storm drain. District storm drains are typically constructed in uplands and are not typically jurisdictional except for the outfall to an otherwise jurisdictional channel or basin at or below the bank.

Transitions (Concrete): Facilities identified as transitions are generally inlets or outlets of channels or basins. Hard-bottom transition areas are typically sloped concrete. Maintenance includes removal of sediment, refuse, debris, and graffiti.

Channels – Earthen-Bottom Facilities

Channels with soft bottoms are not lined with concrete or other material that would restrict percolation of surface water to groundwater.

Natural Watercourse: Natural watercourses include perennial, intermittent, and ephemeral streams, alluvial fans, and desert washes. Maintenance is generally restricted to manual removal of vegetation. Removed vegetation is trucked to a landfill or chipped off site for mulch. Vegetation is removed to clear the flowline and raise the canopy to allow higher capacity flows within the channel.

Earthen Channels with Earthen Banks: These engineered channels with natural, permeable bottoms and side slopes are typically trapezoid shaped. Some are virtually free of vegetation and others are partially vegetated. Maintenance activities include mechanical and manual removal of vegetation, removal of debris, repair of levees and banks, and rodent control. Sediment and debris are cleared from all portions of the channel. This may be performed by the District or by a sand and gravel operator, depending on the amount of sediment that has built up in the channel. The sand and gravel operator may stockpile and screen the material in the channel during the dry season. Best management practices are employed by the District or authorized operator to ensure no impacts are made to water quality from sediment flowing downstream.

Earthen Channels with Riprap Banks: These are engineered channels with natural, permeable bottoms and riprap side slopes. The riprap can be either placed rock or concrete-grouted riprap used for stabilization. They are typically trapezoid shaped. Some are virtually free of vegetation and others are partially vegetated. Maintenance activities include mechanical and manual removal of vegetation, removal of debris, repair of riprap, levees and banks, and rodent control. Sediment and debris are cleared from all portions of the channel. This may be performed by the District or by a sand and gravel operator, depending on the amount of sediment that has built up in the channel. The sand and gravel operator may stockpile and screen the material in the channel during the dry season. Best management practices are employed by the District or authorized operator to ensure no impacts are made to water quality from sediment flowing downstream.

Earthen Channels with Steel Revetment: These are engineered channels with natural, permeable bottoms and vertical steel revetment used as a retaining wall on the sides of the channel. Steel revetment consists of corrugated steel sheets with cable or wire grids attached to steel posts used to secure the walls of the channel. This method is used as the entire side of the channel or as the bottom of the channel with the earthen or riprap bank extending from the top of the steel revetment. Maintenance activities include mechanical and manual removal of vegetation, removal of debris, repair steel revetment, levees and banks, and rodent control. Sediment and debris are cleared from all portions of the channel. This may be performed by the District or by a sand and gravel operator, depending on the amount of sediment that has built up in the channel. The sand and gravel operator may stockpile and screen the material in the channel during the dry season. Best management practices are employed by the District or authorized operator to ensure no impacts to water quality from sediment flowing downstream.

Earthen Channels with Concrete Banks: These are engineered channels with natural, permeable bottoms and sloped concrete banks. Maintenance activities include mechanical and manual removal of vegetation, removal of debris, repair steel revetment, levees and banks, and rodent control. Sediment and debris are cleared from all portions of the channel. This may be performed by the District or by a sand and gravel operator, depending on the amount of sediment that has built up in the channel. The sand and gravel operator may stockpile and screen the material in the channel during the dry season. Best management practices are employed to ensure no impacts to water quality from sediment flowing downstream.

Levees and Groins: Levees and groins are earthen berms or walls used to contain or deflect flows. They generally parallel the course of the flood-control facility. Groins are generally found in wider stream courses and used only to deflect flows away from the bank, preventing erosion or breeching into the developed floodplain. A levee is generally an elevated berm that is used to protect adjacent low-lying ground from floodwaters. It is typically lined with a structural material such as concrete or riprap to ensure that it does not fail from erosion. This lining typically extends many feet belowground to ensure that scour caused by high

water velocities cannot undermine the levee. The tops and sides of the levees are regraded to maintain vehicular access to facilities and to repair erosion or other damage to the banks or levees.

Spreading Grounds: These are typically large areas of native ground or basins with earthen-bottoms used by private and public water purveyors to impound water and recharge groundwater aquifers. Generally, spreading grounds are constructed in conjunction with a channel to divert first flows for impounding.

Dams: Dams are typically large embankments that block existing watercourses to control the release of flood waters downstream of the dam. Dams typically contain an outlet pipe that limits the amount of water that can exit the dam. Any flows in excess of the capacity of the dam outlet are stored behind the dam. Dams also contain an overflow emergency spillway to carry outflows in excess of the design capacity. Most dams are regulated by the Department of Water Resources, Division of Safety of Dams. Dams do contain sediment as water impounds at the embankment. This sediment is removed annually or as necessary to maintain design capacity.

Basins: District basins are generally either basins for detention of water or sediment. Due to California's water shortage, improving water conservation efforts in the District's basins generally means disking, scarifying, or ripping, and/or removing clay/silt layers on the basin bottoms to promote downward percolation. An average basin is approximately 2 acres.

Detention Basins: A detention basin's primary purpose is to "cutoff" peak flows, thereby enabling the use of smaller channels downstream of the basin. Where a dam uses an embankment to impound water, a detention basin will have no embankment or a small embankment. Most of the water pool is stored below grade. Like a dam, a basin will have an outlet pipe and overflow spillway. Any flows that exceed the pipe's outflow capacity are temporarily stored in the basin. Detention basins can be sized to accommodate some sediment and debris deposition, but their primary function is to cutoff peak flows.

Debris Basins: Debris basins are typically located at the mouth of a canyon where there is a potential for large sediment and debris yields. The purpose of the debris basin is to store sediment and debris, not water. Sediment and debris can reduce the capacity of downstream channels, if not contained, and can also plug culverts and road crossings. In addition to spillways and outlet pipes, debris basins also have intake towers, which are designed to allow drainage through the outlet pipes as the sediment level rises in the basin.

Maintenance activities for spreading grounds, dams, and basins generally consists of removing vegetation and sediment from the basin floor, and scraping of the floor to aerate the soil for optimum percolation. Trees and shrubs above 4 feet tall along the side slopes are removed to ensure basin slope stability. Grasses and herbaceous plants on bank slopes are mowed.

Maintenance also includes repair from illegal off-highway vehicle use, blocking illegal access points, homeless camp cleaning, and removal of dumped trash and vehicles.

Transitions (Soft Bottom): Facilities labeled as transitions are generally inflows or outflows of channels or basins. Soft-bottom transitions are typically earthen-sloped areas that convey flows in and out of basins.

1.3.2 Maintenance Activity Type Descriptions

Maintenance Activities Involving Earth-Moving Equipment

This section describes maintenance activities where mechanical earth-moving equipment is involved. Such activities will require a brief plan and activity description to be developed by a qualified vertebrate paleontologist, indicating whether native sediment will be encountered during the maintenance activity, and whether there is potential to impact paleontological resources.

Stockpiling: Maintenance of stockpile locations includes placement of material (i.e., debris and sediment from District facilities) at specific locations for use in repairs and temporary storage. Stockpiles are often treated to avoid the spread of invasive plants.

Mechanized Land Clearing/Excavation: Mechanized land clearing includes channel center flow establishment and maintenance, grading channel inverts/basin bottoms, debris removal, and vegetation removal.

Channel center flow (the establishment and maintenance of a smaller center channel within a channel) is used to convey and guide low-volume storm and dry weather (urban runoff) flows within the center of an earthen channel to keep flows away from the slopes, and for guiding flows. The center flow channel generally represents a width of up to 20% to 50% of the channel and is approximately 2 to 3 feet deep.

Activities may include the following:

- Grading the channel inverts or basin bottoms to properly convey flows downstream.
- Debris removal for flood control, water quality control, and groundwater recharge. Debris removal includes removal of sediment, dead vegetation, and illegally dumped trash. Material is removed to maintain conveyance capacity of each facility as necessary. High-priority facilities must be maintained at 100% capacity at all times. Sand and gravel operators often contract with the District to remove sediment. Basin bottom silt and clays are removed, and soil is typically broken up and kept free of vegetation to enhance groundwater recharge.
- Mechanical vegetation clearing includes the removal of vegetation with equipment such as dozers, graders, loaders, and excavators to allow conveyance of storm flows downstream, to remove large areas of growth from regulated facilities that are certified/inspected by the Federal Emergency Management Agency, the U.S. Army Corps of Engineers, and California Department of Water Resources, Division of Safety of Dams.

Bank Repair: Bank repairs include removal of excess sediment and sand from the bottom (invert) of the channel or basin or on-site/off-site stockpile location and placing it onto the side slopes. Sometimes, additional and incidental riprap rock or gabion placement may be required for banks that experience frequent erosion resulting in high frequency of maintenance. Riprap repair includes repositioning, replacement, or placement of incidental riprap to stabilize the slopes. It also includes the repair of grouted and ungrouted sections of rock.

Flood Control Structure Repair: Existing flood-control structure repair or in-kind replacement include those appurtenant structures such as inlets, outlets, culverts, spillways, bottom controls, water quality

structures (including settling basins and riprap), any irrigation systems, channel invert improvements, and groundwater recharge structures such as berms and rubber dams.

Maintenance Activities Not Involving Earth-Moving Equipment

The activities described below do not involve the use of earth-moving equipment and do not require a plan and description to be developed by a paleontologist.

Vegetation Management, Including Mowing and Hand Clearing: Mechanical and manual vegetation management activities occur, including mowing, disking, and manual pruning, to remove vegetation within facilities that prevent the proper conveyance of storm flows downstream. Dense vegetation can be uprooted in heavy storms and damage downstream facilities. Mowing and vegetation management activities such as disking and manual removal, result in thinning and involve shallow soil disturbance, which encourages seed germination, soil aeration, and insect populations. Equipment used includes tractor mowers, tractor and disk trailer, and boom mowers. Manual removal includes using power trimmers and manual tools to trim vegetation so it does not clog downstream facilities or reduce water quality.

Herbicide and Rodenticide: Herbicide application, sometimes referred to as chemical vegetation clearing, is accomplished by trained and licensed applicators to manage vegetation. Herbicides are used to prevent the spread of invasive species considered detrimental to flood control facilities. Equipment used includes sprayers mounted on a service truck, or backpack sprayers.

Rodenticide is applied by a licensed applicator to control burrowing rodents from destabilizing banks and levees; California ground squirrels (*Spermophilus beecheyi*) are generally the targeted species.

Ingress/Egress: Maintenance of access roads includes fencing and gate repairs, signage, road grading, and pavement repair.

Graffiti Removal: Graffiti is removed by spraying paint on the concrete facility. Graffiti removal also includes cleanup of discarded spray paint cans.

Vector Control: Vector control primarily involves mosquito control to reduce the spread of disease, including West Nile virus. Vector control is conducted by the County Environmental Health Department, Mosquito/Vector Control office and includes biopesticides and introduction of mosquito-larvae eating fish.

Stream Gage Maintenance: This includes maintenance of stream gages and stream gage sites as well as other scientific measurement devices to measure and record scientific data, including water quality monitoring wells and sampling stations.

This document reviews the types of facilities within the District and reviews the forms of maintenance conducted on earthen-bottom as well as concrete and other hard-bottom facilities. In summary, paleontological resource impact mitigation programs are necessary only at earthen-bottom facilities where mechanized earth-moving equipment will be used. A list of earthen-bottom facilities is presented as Appendix B.

2.0 REGULATORY SETTING

The laws and regulations regarding paleontological resources are implemented at the federal level and include protection measures on federal lands (i.e., federally managed lands such as those of the U.S. Department of the Interior, Bureau of Land Management) and therefore do not pertain to County facilities and County activities at those facilities; consequently, these federal laws and regulations are not discussed in this report. CEQA is the primary state law governing and affecting the management and protection of paleontological resources at the state level, and CEQA-mandated preservation of paleontological resources is described below. Other relevant regulations at the local level include the County's General Plan and the legislation cited in Appendix C. A description of the applicable laws, regulations, and guidelines is provided in the following paragraphs.

2.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA is the principal statute governing environmental review of programs occurring in the state. CEQA requires lead agencies to determine if a proposed program would have a significant impact on paleontological resources. In particular, Appendix G (part V) of the CEQA Guidelines provides guidance relative to significant impacts on paleontological resources, stating that "a Program will normally result in a significant impact on the environment if it will…directly or indirectly destroy a unique paleontological resource or site or unique geologic feature." According to the Standard Environmental Reference (SER) for Paleontology by prepared by the California Department of Transportation (Caltrans) (2008), the significance of a paleontological resource may be stated for a particular fossil species, fossil assemblage, or for a rock unit as a whole. There are two generally recognized types of paleontological significance:

National: A National Natural Landmark-eligible paleontological resource is an area of national significance (as defined under 36 CFR 62) that contains an outstanding example of fossil evidence of the development of life on earth.

Scientific: Definitions of a scientifically significant paleontological resource can vary by jurisdictional agency and paleontological practitioner.

Generally, scientifically significant paleontological resources are identified sites or geological deposits containing individual fossils or assemblages of fossils that are unique or unusual, diagnostically or stratigraphically important, and add to the existing body of knowledge in specific areas, stratigraphically, taxonomically, or regionally (SVP, 2010). Particularly important are fossils found *in situ* (undisturbed) in primary context (i.e., fossils that have not been subjected to disturbance subsequent to their burial and fossilization). As such, they aid in stratigraphic correlation, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, paleoclimatology, the relationships between aquatic and terrestrial species, and evolution in general. Discovery of *in situ* fossil-bearing deposits is rare for many species, especially vertebrates. Terrestrial vertebrate fossils are often assigned greater significance than other fossils because they are rarer than other types of fossils.

The SVP (2010, 1995) provides the following definitions of significance.

- **Significant Nonrenewable Paleontological Resources** are fossils and fossiliferous deposits here restricted to vertebrate fossils and their taphonomic and associated environmental indicators. This definition excludes invertebrate and botanic fossils except when present within a given vertebrate

assemblage. Certain plant and invertebrate fossils or assemblages may be defined as significant by a project paleontologist, local paleontologist, specialist, or special interest groups, or by lead agencies or local governments.

- **A Significant Fossiliferous Deposit** is a rock unit or formation that contains significant nonrenewable paleontological resources, here defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces, and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information (ichnites and trace fossils generated by vertebrate animals [e.g., trackways or nests and middens, which provide datable material and climatic information]). Paleontological resources are considered to be older than recorded history and/or older than 5,000 years before present (BP).

According to Caltrans (2008), scientifically significant paleontological resources are identified sites or geologic deposits containing individual fossils or assemblages of fossils that are unique or unusual, diagnostically or stratigraphically important, and add to the existing body of knowledge in specific areas, stratigraphically, taxonomically, or regionally (Reynolds, 1990:6, cited in Caltrans 2008). Particularly important are fossils found *in situ* in primary context (e.g., fossils that have not been subjected to disturbance subsequent to their burial and fossilization). As such, they aid in stratigraphic correlation, particularly those offering data for the interpretation of tectonic events, geomorphological evolution, paleoclimatology, the relationships between aquatic and terrestrial species, and evolution in general. Discovery of *in situ* fossil bearing deposits is rare for many species, especially vertebrates.

Summary of Significance

This document uses an abbreviated summary defining significance in paleontological resources: All vertebrate fossils that can be related to a stratigraphic context are significant and are considered significant nonrenewable paleontological resources. Invertebrate and plant fossils as well as other environmental indicators associated with vertebrate fossils are considered significant. Certain invertebrate and plant fossils that are regionally rare or uncommon, or help to define stratigraphy, age, or taxonomic relationships, are considered significant.

Additional guidelines for paleontological resource evaluation and management are provided by the Society of Vertebrate Paleontology (SVP, 2010).

3.0 METHODS

3.1 GEOLOGIC MAP REVIEW

Robert E. Reynolds reviewed geologic maps by Morton and Miller (2006), Dibblee and Minch (2003a, 2003b, 2004a, 2004b, 2004c), Bishop (1963), and Dibblee (1964) showing geologic units at each facility. The type of geologic unit indicates whether the underlying or surrounding sediments are conducive to preservation of paleontological resources at a given facility. Facilities with concrete bottoms and sides were categorically excluded as not having potential for future earth-moving activities (see Appendix D). Also exempt are routine maintenance activities planned to occur within earthen bottom facilities that are restricted to previously disturbed sedimentary deposits.

3.2 LITERATURE SEARCH

Published and unpublished literature relevant to geology, stratigraphy, and paleontology in the County was reviewed, including U. S. Geological Survey and California Division of Mines and Geology serial publications and recent research published through California State University, Desert Studies Consortium.

4.0 RESULTS

4.1 GEOLOGY AND PALEONTOLOGICAL RESOURCES

The general geology and brief reference to paleontological resources known from each of the six District zones in San Bernardino County is described below. All zones contain at least some geological units characterized as potentially fossiliferous which may be impacted by the use of earth-moving equipment in earthen-bottom facilities that extend outside of the vertical and horizontal footprint of existing disturbed sediments. All maintenance projects in earthen-bottom facilities where mechanized earth-moving equipment will be used in such previously undisturbed fossiliferous units will need to be reviewed by a vertebrate paleontologist who will develop a paleontological resource impact mitigation program (PRIMP, or plan), or who will provide a short report delineating reasons why such a plan is not necessary. A list of earthen-bottom facilities is presented as Appendix B.

Zone 1

Chino Hills: The Chino Hills area consists of Miocene marine sediments including the Soquel, Yorba, and Sycamore Canyon members of the Puente Formation (Morton and Miller, 2006; Durham and Yerkes, 1959; Reynolds, 1985, 1989a, 1989b; Kinoshita, 1992). These marine sediments are very fossiliferous, containing whales, porpoise, birds, fish, sharks, mollusks, seaweed, and leaves of plants from the adjacent continent (R. Reynolds, pers. obsv.). Canyons incised into the marine sediments contain late Pleistocene fill with Ice Age vertebrate fossils. At the Carbon Canyon Wastewater Facility in the Chino Hills, giant ground sloth and camel were discovered 11 feet below surface (Reynolds and Reynolds, 1991a). The marine and Pleistocene sediments are covered by a thin layer of recent soil.

Chino: The Chino area is located on flat lands east of the Chino Hills that consist of a thin layer of Holocene (Recent) sediments overlying fossiliferous sediments at shallow depth. Ice Age bison, mammoth, and horse have been recovered north of the intersection of Euclid and Pine avenues (M. Roeder, pers. comm. to Reynolds, 2014). The "Majestic" mammoth was recovered from a project along Kimball Avenue. At Los Serranos Creek, near-surface Pleistocene terrace deposits produced Ice Age bison, horse, and deer.

Literature review indicates that paleontological resource localities are known from this portion of the western San Bernardino Basin (Reynolds and Reynolds, 1991a). The saber-tooth cat, *Smilodon*, was reported from Declezville (western Fontana), 5 feet below surface on the north side of the Jurupa Hills. Near Banana Street, in western Fontana, a mastodon was located at shallow depth. At the site of Champagne, on the east side of the Interstate 15, a mammoth was recovered from a 5-foot depth in a flood control basin. These localities suggest that there is a high potential for significant vertebrate fossils to be encountered by construction excavation below a depth of three feet in the San Bernardino Basin (Reynolds and Reynolds, 1991a).

Upland – Rancho Cucamonga: The area south of Interstate 210 contains yellowish silty sands at depths between1 and 5 feet. The KB Home Lexington and Brighton Tracts 16454 and 16455 are located immediately north of the KB Home Tract 16643 on Emma Lane. The excavation monitoring program for these tracts (Reynolds, 2004a) located the first Pleistocene fossils known from Rancho Cucamonga. These included fossil remains of *Thomomys* sp., cf. *T. bottae*, Botta's pocket gopher, and *Neotoma* sp., cf. *N. lepida*, and desert woodrat. Excavations in Rancho Cucamonga along or north of Base Line Road (Reynolds, 2004b, 2004c, 2004d) exposed

yellow silty sand at a depth of 2 to 3 feet below coarse topsoil. Geotechnical reports from parcels along Archibald Avenue (Riddell and Bartee, 2003) indicated that yellow, sandy clay and clayey sand occur between depths of 1 to 5 feet or more below the surface of the parcel and are recorded in boring logs.

Zone 2

Cajon/Lytle Creeks: This northern portion of Zone 2 contains Lytle Creek and Cajon Creek. Headward erosion along the latter has exposed the Cretaceous Cosy Dell Formation, containing fossil elasmosaurs and invertebrates (Lucas and Reynolds, 1991) and the late Oligocene Vaqueros Formation, containing fossil dolphin, sharks, and mollusks (Barnes and Reynolds, 2008). Early Miocene continental sediments west of the Squaw Peak Fault are the Cajon Valley Beds that contain fossil horses, rhinos, chalicotheres, camels, peccaries, and rodents (Woodburne and Golz, 1972; Reynolds, 1991; Coombs and Reynolds, 2015). To the east is the Crowder Formation, which contains a variety of large and small Miocene land mammals (Reynolds and others, 2008).

San Bernardino: The central San Bernardino Basin has been filled with a thick layer of Holocene sediment that is too recent to contain vertebrate fossils in a meaningful stratigraphic context. As noted, vertebrate fossils have been found at relatively shallow depth south of Interstate 10 and north of the Jurupa Hills. The saber-tooth cat, *Smilodon*, was reported from Declezville (western Fontana), 5 feet below surface on the north side of the Jurupa Hills (Reynolds and Reynolds, 1991a). Near Banana Street, in western Fontana, a mastodon was located at shallow depth. East of Interstate 15, the Champagne flood control basin produced a mammoth from a depth of 5 feet below the ground surface (Reynolds and Reynolds, 1991a).

The Miocene Santa Ana Sandstone in the San Andreas Fault Zone and along Mill Creek has produced fossil vertebrates and plants (Reynolds, pers., obsv.; Dibblee and Minch, 2004a, 2004b).

Reche Canyon Area: The Reche Canyon area has exposures of the Upper (Reche) Member of the San Timoteo Formation. This formation spans the late Miocene, Pliocene, and most of the Pleistocene epochs. The age of the deposit was initially estimated by the contained vertebrate fossils including camel, gomphothere, horse, bear, giant sloth, rodents, and reptiles (Frick, 1921, 1933; Reynolds and Reeder, 1991; Albright, 1999). Recent excavations have produced sloth skulls, complete horse skeletons, and the large cats *Smilodon gracilis* and *Homotherium* sp. (Reynolds and others, 2013).

Zone 3

San Bernardino East Basin and south mountain slopes: The northeastern portion of this area contains the Santa Ana River and Mill Creek drainages which expose the Santa Ana Sandstone and Potato Sandstone of Miocene age that contain vertebrate and plant fossils (Reynolds, pers., obsv.; Dibblee and Minch, 2003a, 2003b, 2004c; Morton and Miller, 2006).

San Timoteo Badlands: These fossiliferous sediments are drained by San Timoteo Creek from Beaumont to the Redlands/Loma Linda area. The "badlands" consist of the San Timoteo Formation that spans the late Miocene, Pliocene, and most of the Pleistocene. The age of the deposit was initially estimated by the contained vertebrate fossils including camel, gomphothere, horse, bear, giant sloth, rodents, and reptiles (Frick, 1921, 1933; Reynolds and Reeder, 1991; Albright, 1999). Recent excavations have produced sloth skulls, complete horse skeletons and the large cats *Smilodon gracilis* and *Homotherium* sp. (Reynolds and others, 2013).

Zone 4

Sheep Creek Drainage: This drainage is located on fanglomerates spreading north from the San Gabriel Mountains in western San Bernardino County. Vertebrate fossils have been noted to the west at Barrel Spring near Palmdale and to the east in Adelanto (Cox and Tinsley, 1999; Reynolds, 1989c).

Upper Mojave River – Hesperia: Terraces along the west and east sides on the Mojave River in Hesperia and south Victorville have produced temporally diagnostic fossils of early Pleistocene age (Reynolds and Reynolds, 1994; Cox and Tinsley, 1999).

South-Central Mojave River – Victorville/Helendale: Terraces along the Mojave River east of Adelanto have produced remains of Ice Age mammoth, horse, and camel (Romero and Hilburn, 2006).

Central Mojave River – Lenwood/Barstow/Yermo/Afton: The Lenwood anticline in the west Barstow/Lenwood area has a "core" of Barstow Formation sediments that extends north to the community of Grandview. Petrified palm wood verifies the age and potential for the sediments to contain Miocene fossils (Reynolds, pers. obsv. 2016).

Pleistocene terrace deposits along the Mojave River in this area contain vertebrate fossils at the interchange of Interstate 15 and (new) Highway 58 (Q. Lake, pers. comm. to Reynolds, 2016). A fossil mammoth from Daggett is responsible for the naming of Elephant Mountain (Schoffstall, 2010). An Ice Age horse skull was recovered from the southwest corner of the intersection of Ghost Town Road and Interstate 15 (Reynolds, pers. obsv. 1996).

Ponding of the Mojave River on the west side of the Calico Fault in the latest Pleistocene (12,000 to 9,000 years ago) trapped the remains of abundant Ice Age mammals, birds, reptiles, fish, and mollusks (Reynolds, 1987; Reynolds and Reynolds, 1984, 1985a, 1985b, 1991b).

The late Pleistocene Lake Manix Formation exposed along the Mojave River and its prolific Ice Age fossil fauna has been previously described (Jefferson, 2003).

Terminal Mojave River – Soda/Silver Lakes: After the Mojave River filled the Manix, Coyote, and Troy basins with deltaic sand, it broke through the Afton barrier and allowed water to flow into Soda and Silver lakes, respectively, north and south of Baker, on Interstate 15.

Late Pleistocene fossils found in lacustrine sediments at Silver Lake include deer, gophers, kangaroo rats, wood rats, pocket mice, squirrels, rabbits, snakes, lizards, frogs, and fish (Reynolds, 2004e).

Zone 5

Mojave Forks – Horsethief and Little Horsethief Canyons: Erosion along these drainages has exposed outcrops of the Miocene Crowder Formation (Reynolds and others, 2008).

Mojave River West Fork: Outcrops of the Miocene Crowder Formation (Reynolds and others, 2008) are exposed along the West Fork.

Miller Canyon – East Fork: Sediments exposed along this drainage have produced Miocene bird fossils from sediments referred to as the Crowder Formation (Reynolds, pers. obsv.).

Zone 6

Northwestern Mojave Desert

Searles Lake: Shoreline sediments from the Ice Age high stand of Searles Lake are located on slopes along the west side of the lake (Jennings and others, 1962).

Eastern Mojave Desert

Arrowhead Junction/Piute Wash: Red Miocene sediments at Kleinfelter, on the west side of Piute Wash and south of Interstate 40, have produced a small fossil horse jaw (Reynolds and others, 2016a).

Needles: Terraces around the town of Needles contain exposures of the fossiliferous early Pliocene Bouse Formation (Reynolds and others, 2016a; Reynolds and others, 2016b), which is overlain by the Pliocene Bullhead Alluvium and the Pleistocene Chemehuevi Formation, the latter producing fossil mammoth and antelope (Agenbroad and others, 1992; Reynolds and others, 2016c).

Southern Mojave Desert

Twentynine Palms: Sediments on Campbell Hill and outcrops south of Highway 62 are approximately 700,000 years old and contain a suite of Ice Age mammals (Jefferson, 1986, 1991). Surprise Spring, west of Twentynine Palms, has produced a late Pleistocene mammal fauna (Jefferson, 1991, 1992).

Yucca Valley: Sediments uplifted on the south side of the Pinto Mountain Fault, southwest of Copper Mountain, contain fossil camel and rodents of Pleistocene age (Reynolds, pers. obsv.).

At the summit of Highway 62 in western Yucca Valley, mid-Pleistocene sediments have produced a fossil horse tooth (San Bernardino County Museum collections; Reynolds, pers. obsv.). This area also contains sediments of the Pioneertown Miocene sequence that have been offset from the main outcrops of fossiliferous sediments to the north at Pioneer Town (J. Grimes pers. comm. to Reynolds, 1986; Reynolds, 1992).

Central San Bernardino County

Big Bear Lake: A giant ground sloth was reported from Pan Hot Springs on the north side of Big Bear Lake (San Bernardino County Museum records).

Lucerne Valley: Pleistocene horse bones were found at Rabbit Springs in the scarp of the Helendale Fault at the west margin of Lucerne Dry Lake (Reynolds, pers. obsv.; Jefferson, G.T. 1989; Reynolds, 2012).

5.0 IMPACT ANALYSIS AND RECOMMENDED MITIGATION MEASURES

5.1 IMPACT ANALYSIS AND CONCLUSIONS

This study has determined that maintenance work involving earth-moving activities within previously undisturbed, Pleistocene age and older, sedimentary deposits at earthen-bottomed facilities has the potential to adversely impact paleontological resources. The remainder of the facilities are either not sited on paleontologically sensitive sediments, or are hard-bottomed construction that are not subject to ground disturbance during routine maintenance.

All maintenance projects in earthen-bottom facilities meeting the above referenced criteria will need to be reviewed by a vertebrate paleontologist who will develop a "statement of potential impacts." This statement will be based on the following four criteria and will either state that a resource impact mitigation plan must be written to accompany facility maintenance or that due to geologic, structural, or mechanical reasons, a plan of impact mitigation is not necessary.

1. Planned maintenance action and depth of excavation into native sediment
2. Geologic units that might be encountered
3. Paleontological resource records search results for the surrounding area
4. Field survey results

Evaluation of the maintenance program will be used to develop the resource impact mitigation plan, or PRIMP, that includes excavation monitoring and resource recovery program, followed by cleaning, stabilization and inventory of specimens, a report describing results and report submittal to District and the designated repository, and curation of specimens into a local established museum repository.

The County's General Plan requires a paleontological principal investigator to develop the resource impact mitigation plan based on established measures, as described in Section 5.2.

5.2 RECOMMENDED MITIGATION MEASURES

Paleontological Resource Impact Mitigation Program

- A paleontological principal investigator will provide and supervise a trained paleontological monitor who will be present during ground-disturbing activities at identified facilities with fossiliferous sediments. The monitor will be empowered to temporarily halt or redirect ground-disturbing activities to ensure avoidance of adverse impacts to paleontological resources. The monitor will be equipped to rapidly remove any large fossil specimens encountered during excavation. During monitoring, samples will be collected and processed to recover microvertebrate fossils. Processing will include wet screen washing and microscopic examination of the residual materials to identify small vertebrate remains.
- Upon encountering a large deposit of bone, salvage of all bone in the area will be conducted with additional field staff and in accordance with modern paleontological techniques.

- All fossils collected during the project will be prepared to a reasonable point of identification. Excess sediment or matrix will be removed from the specimens to reduce the bulk and cost of storage. Itemized catalogs of all material collected and identified will be provided to the museum repository along with the specimens.
- A report documenting the results of the monitoring and salvage activities and the significance of the fossils will be prepared.
- All fossils collected during this work, along with the itemized inventory of these specimens, will be deposited in a museum repository for permanent curation and storage.

Compliance with these recommendations will ensure that impacts to the paleontological resources are maintained below a level of significance.

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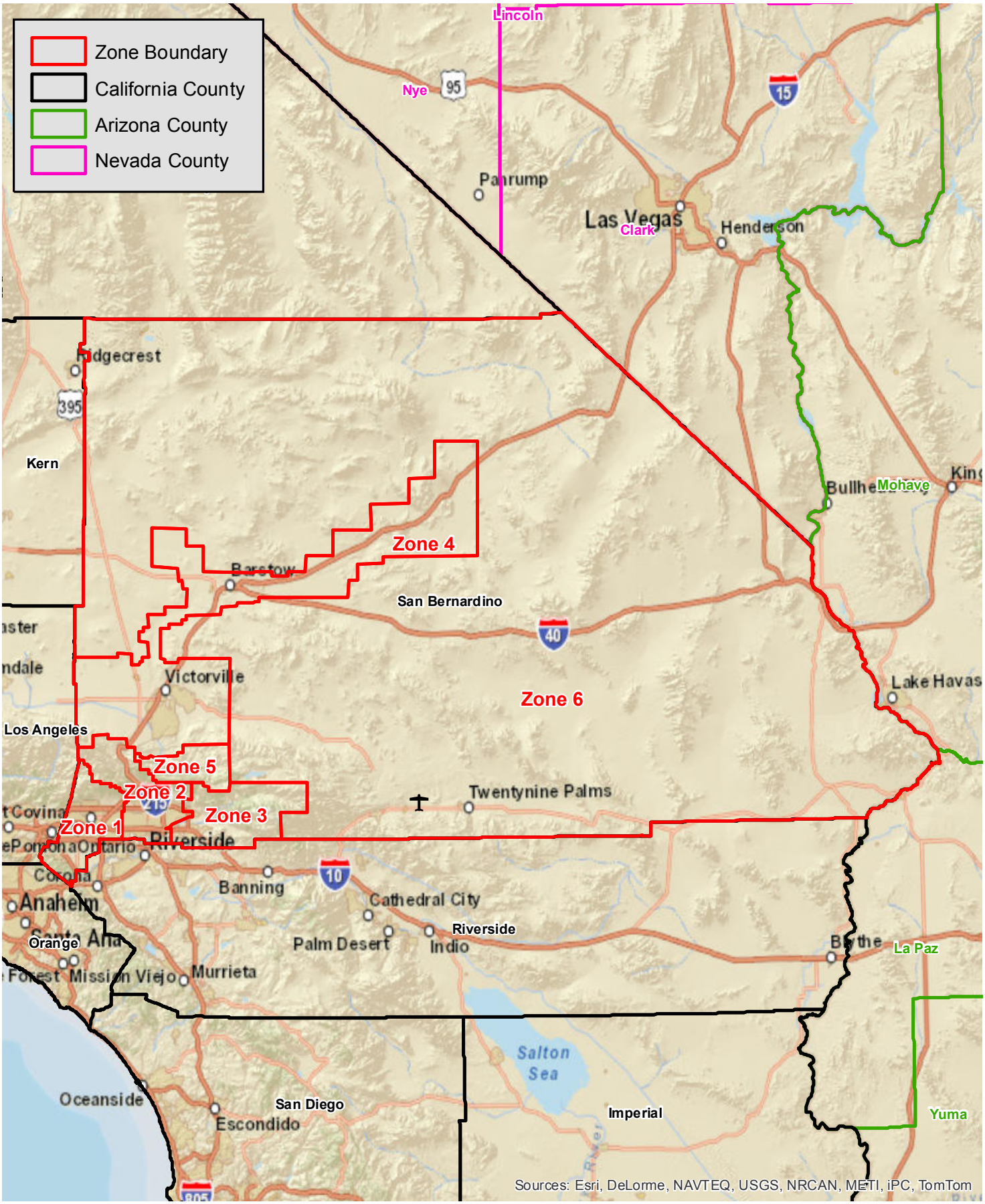


PCR

0 30 Miles 0 40 Kilometers

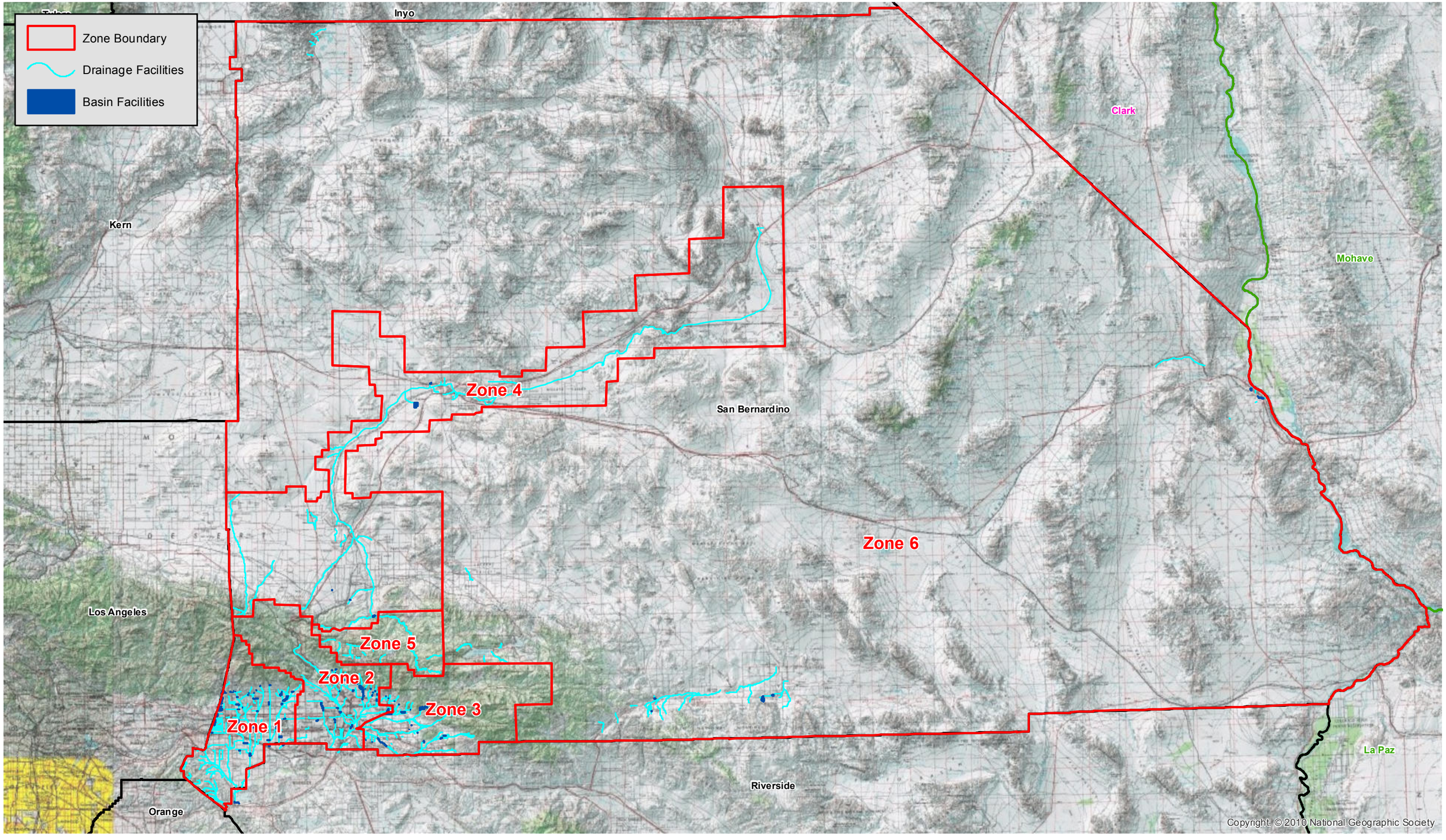
Regional Map

Systemwide Maintenance Project

Source: ESRI Street Map, 2009; PCR Services Corporation, 2014.

FIGURE

1



PCR

15 0 15 Miles 20 0 20 Kilometers

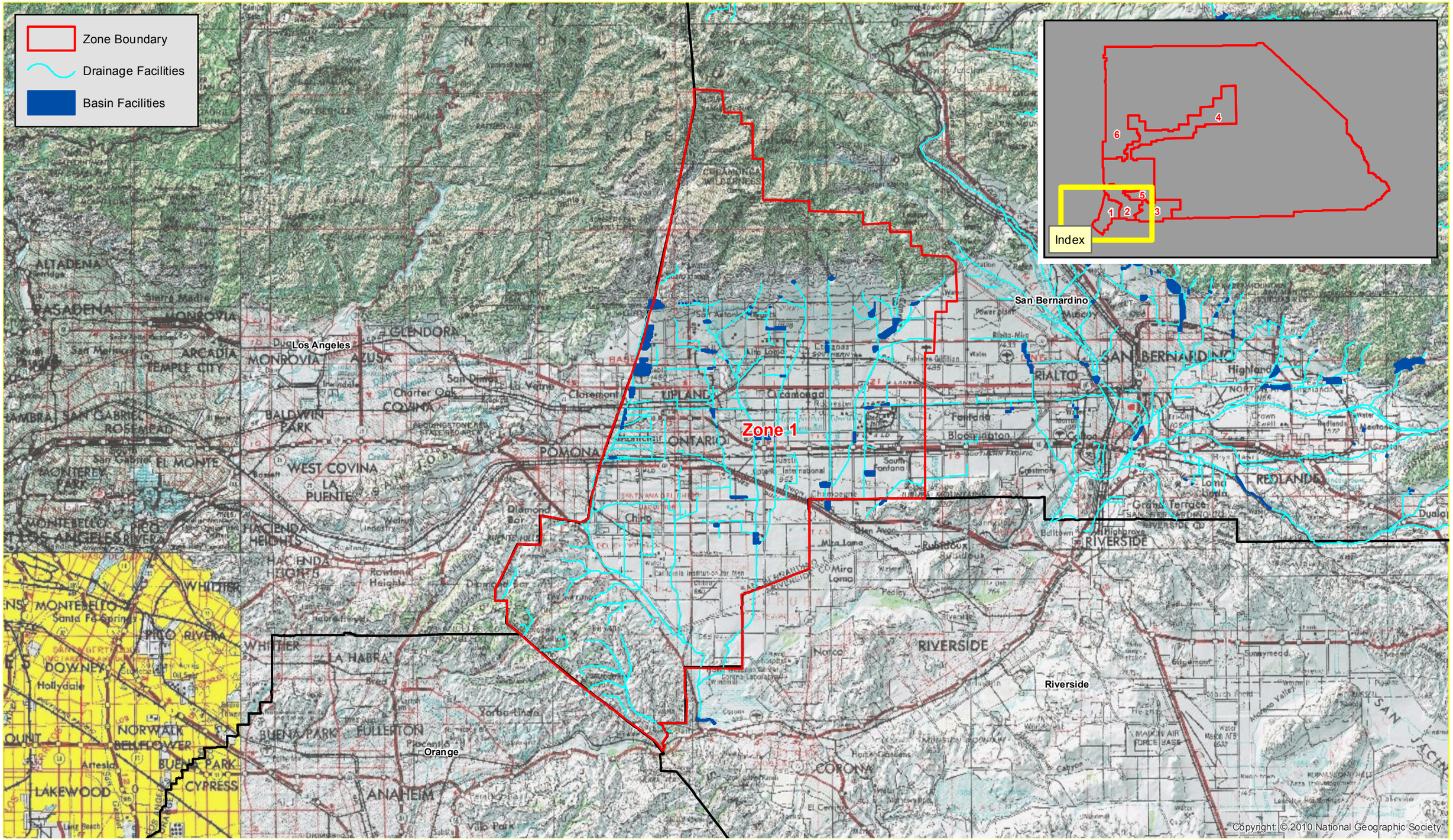
Facilities Map - Index

Systemwide Maintenance Project

Source: USGS Topographic Series; PCR Services Corporation, 2014.

FIGURE

2A



PCR

N

4 0 4 Miles

5 0 5 Kilometers

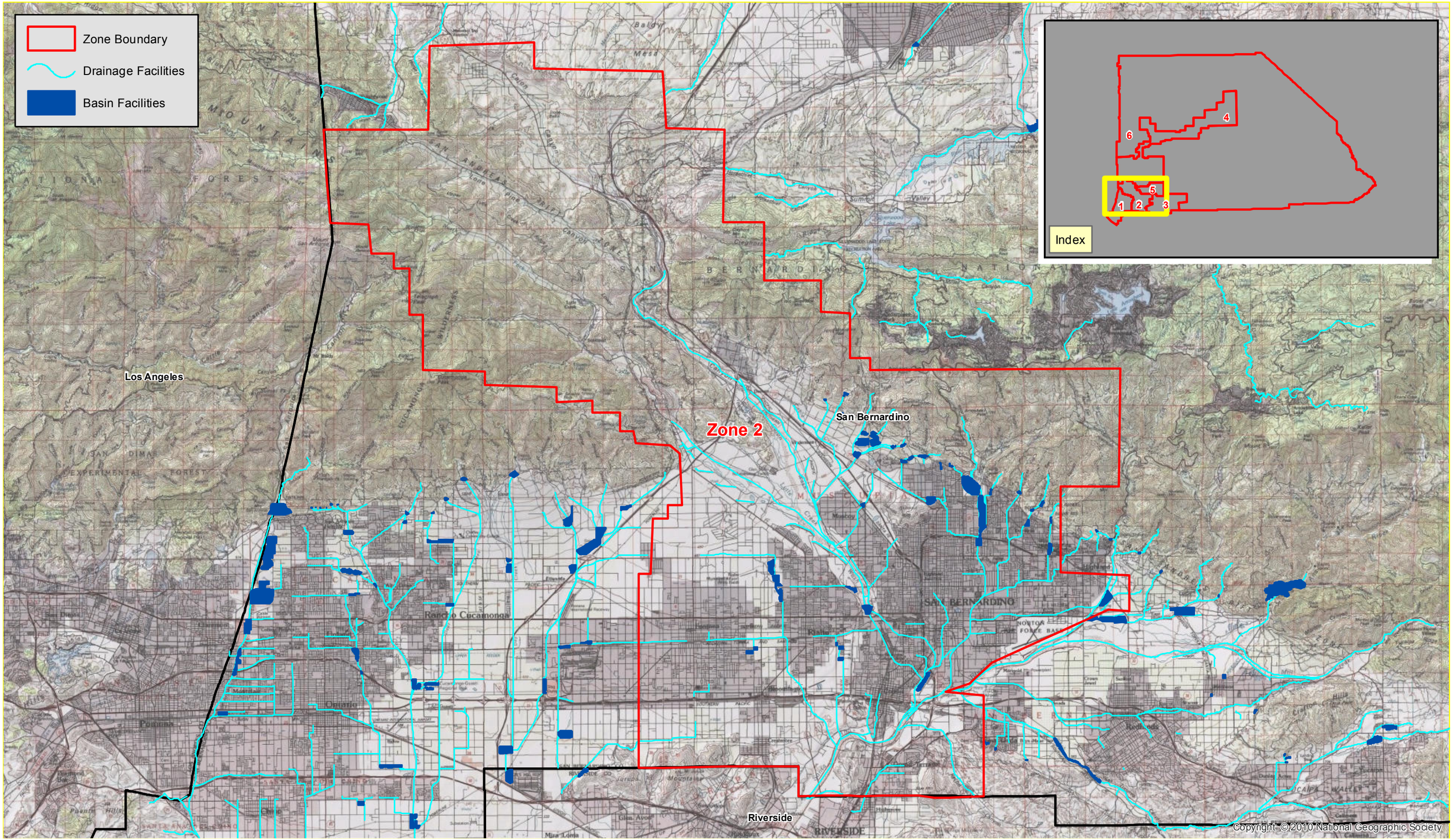
Facilities Map - Zone 1

Systemwide Maintenance Project

Source: USGS Topographic Series; PCR Services Corporation, 2014.

FIGURE

2B



N

3 0 3 Miles

5 0 5 Kilometers

PCR

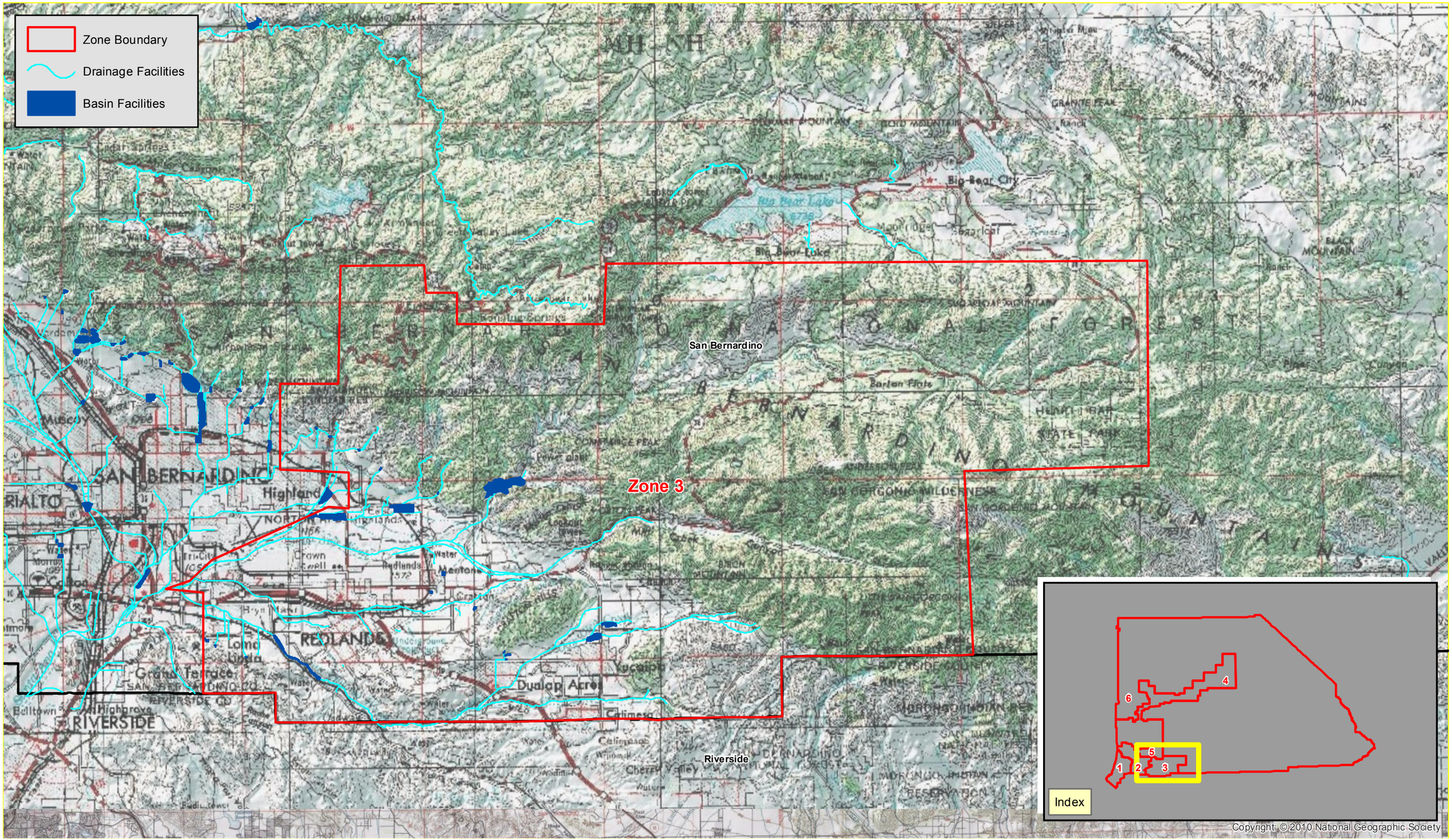
Facilities Map - Zone 2

Systemwide Maintenance Project

Source: USGS Topographic Series; PCR Services Corporation, 2014.

FIGURE

2C



PCR

3 0 3 Miles 5 0 5 Kilometers

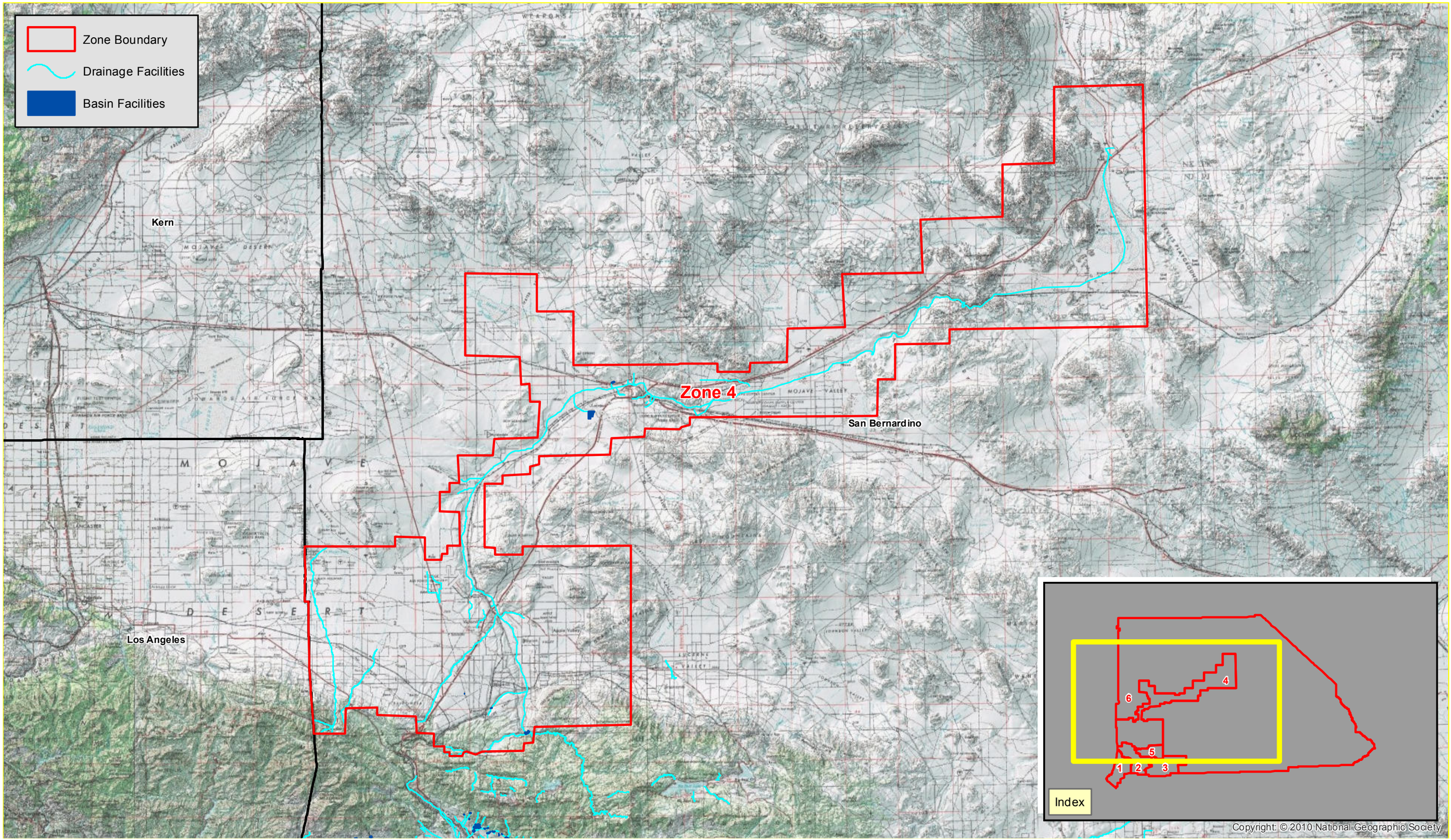
Facilities Map - Zone 3

Systemwide Maintenance Project

Source: USGS Topographic Series; PCR Services Corporation, 2014.

FIGURE

2D



PCR

10 0 10 Miles 20 0 20 Kilometers

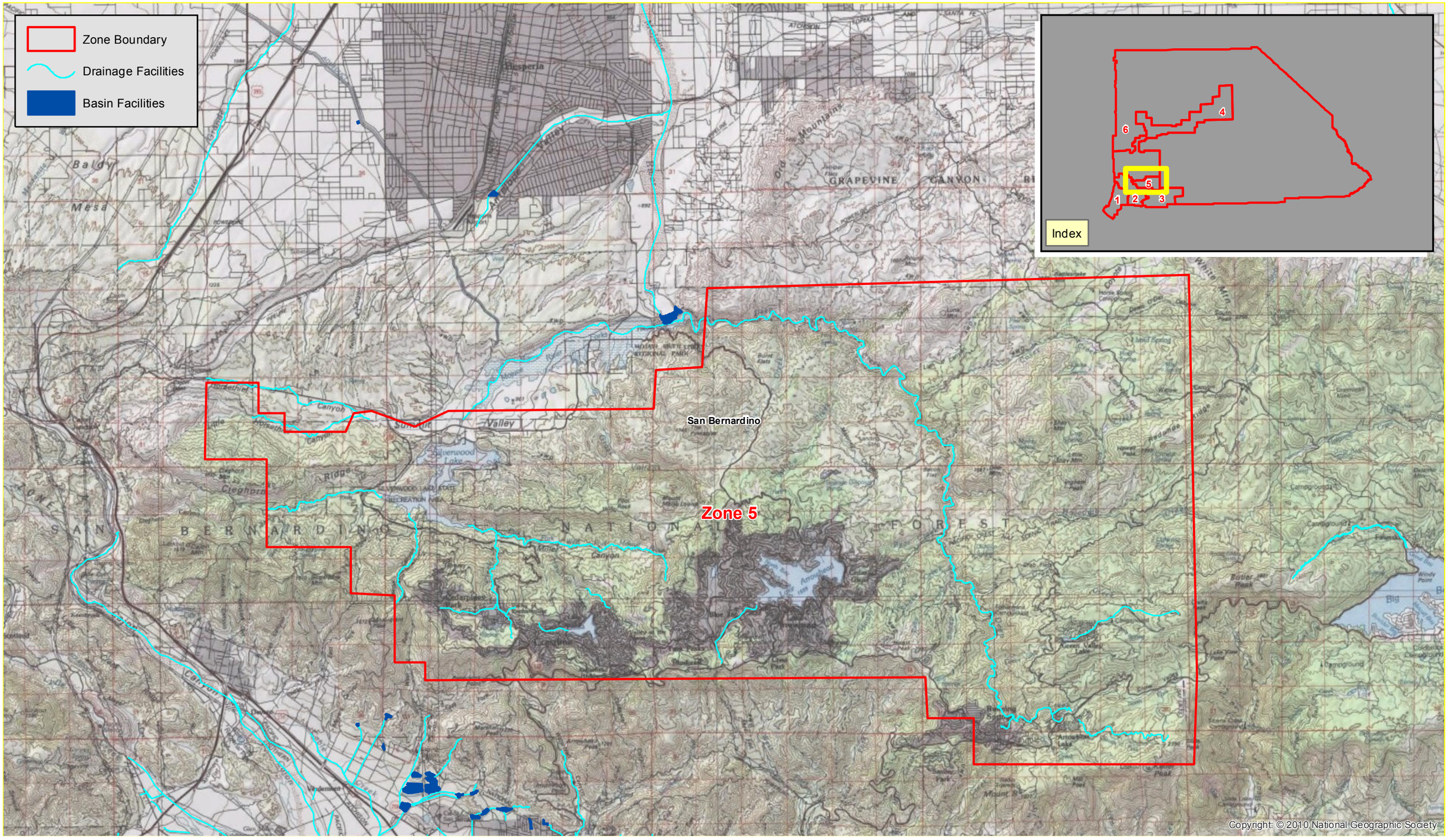
Facilities Map - Zone 4

Systemwide Maintenance Project

Source: USGS Topographic Series; PCR Services Corporation, 2014.

FIGURE

2E



PCR

N

2 0 2 Miles

3 0 3 Kilometers

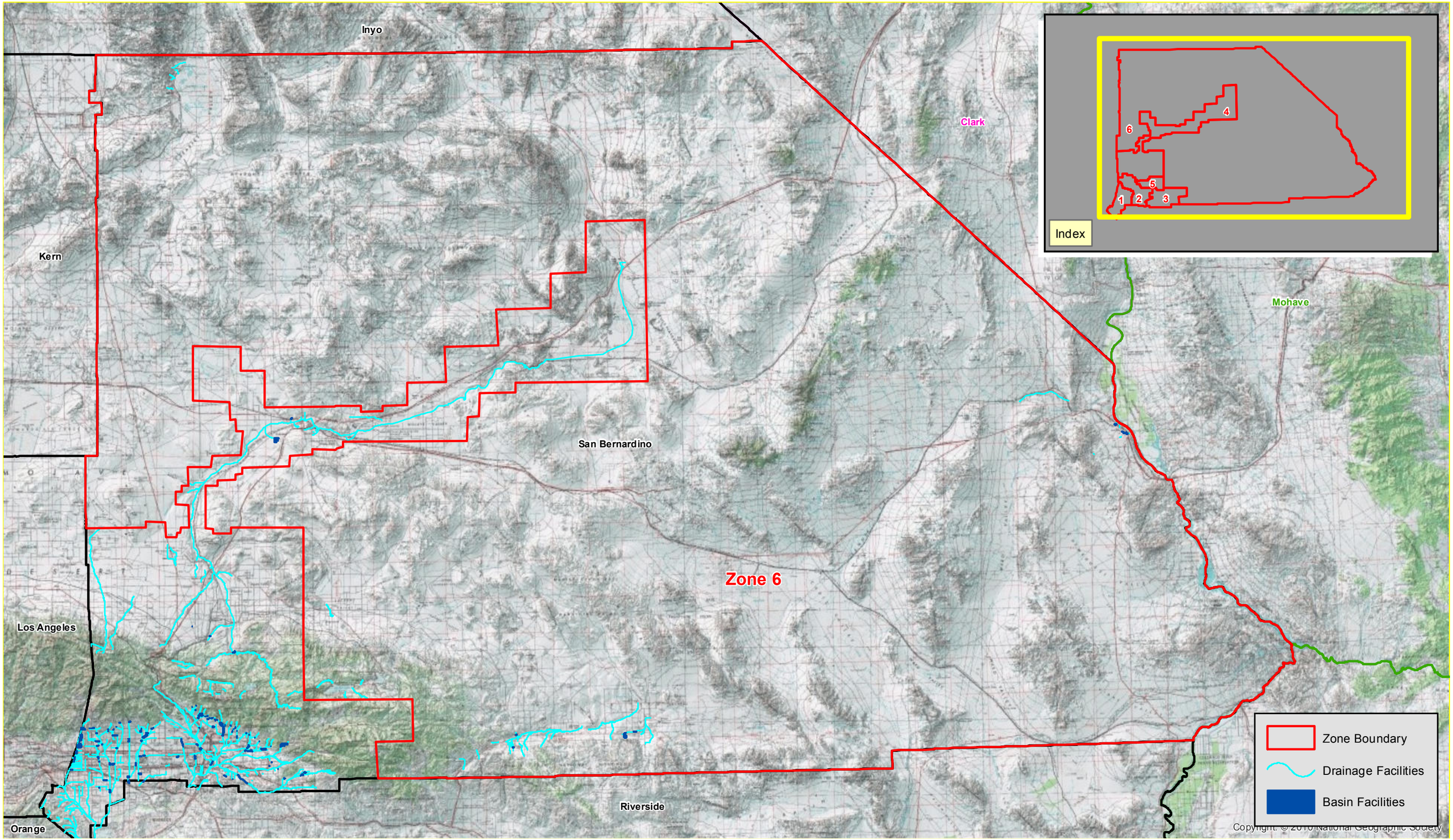
Facilities Map - Zone 5

Systemwide Maintenance Project

Source: USGS Topographic Series; PCR Services Corporation, 2014.

FIGURE

2F



PCR

N

15 0 15 Miles

20 0 20 Kilometers

Facilities Map - Zone 6

Systemwide Maintenance Project

Source: USGS Topographic Series; PCR Services Corporation, 2014.

FIGURE

2G

Appendix A – Personnel Qualifications

Sarah Siren

Senior Paleontologist

Sarah Siren is a senior paleontologist with 16 years' experience as a paleontological resources consultant. She has served as paleontologist for numerous projects throughout California, with extensive experience in Imperial, Orange, Riverside, Los Angeles, San Bernardino, and San Diego Counties. These projects involved multiple agencies, public and private sector clients, a variety of resources, and multidisciplinary staff supervision. She specializes in California Environmental Quality Act (CEQA) and Bureau of Land Management (BLM) compliance standards. She taught at Saddleback Community College in Mission Viejo, California as an associate geology professor, and worked as a curatorial assistant with the Natural History Museum of Los Angeles County and, more recently, as a field manager with the San Diego Natural History Museum.

While in college pursuing her degrees, she conducted studies at both the Smithsonian Institution and Badlands National Park, and supervised as lead research scientist for various field activities, curation projects, and laboratory preparations. Her diverse experience includes recovering, identifying, mapping, and preparing fossils. Ms. Siren is able to effectively manage projects and complete deliverables from assessments to final technical reports in a timely manner.

EDUCATION

South Dakota School of Mines and Technology
MS, Paleontology, 2002

George Washington University
BS, Geology, 1999
BA, French Language and Literature, 1999

CERTIFICATIONS

Geologist-in-Training, No. 167 California, 2007

Certified GIS Professional (GISP), 2013

40-hour HAZWOPER Training, 2008

Qualified Paleontologist, City of San Diego and Counties of Kern, Los Angeles, Orange, Riverside, San Diego, and San Luis Obispo

AFFILIATIONS

Departmental Associate, San Diego Natural History Museum, 2007–Present.

Museum Associate, Natural History Museum of Los Angeles County, 2003–Present

Society of Vertebrate Paleontology, 1997–Present

Geological Society of America, 1998–Present

South Coast Geological Society, Treasurer, 2008

Project Experience

California Valley Solar Ranch Project, NRG/ Sun Power, County of San Luis Obispo, California. As project manager and co-principal investigator, supervised the paleontological mitigation program in accordance with the paleontological monitoring and treatment plan for the project.

San Joaquin Cross Valley Loop Project, Southern California Edison (SCE), City of Visalia, Tulare County, California. As project manager, co-authored the final technical report on paleontological resources for the San Joaquin Cross Valley Loop Project in Tulare County, California. The final report was written in compliance with CEQA and Tulare County guidelines for approval by the CPUC.

Tehachapi Renewable Transmission Project (TRTP), Southern California Edison (SCE), Kern County, Los Angeles County, San Bernardino County, California. As project manager, evaluated paleontological resource discoveries during construction for this multi-year SCE project. Ongoing excavation activities within the Miocene-age Puente Formation in Los Angeles and San Bernardino counties have the potential to yield scientifically significant fossils during construction on this large-scale project.

Path 46 Transmission Line Project, Los Angeles Department of Power and Water (LADWP), San Bernardino County, California, and Clark County, Nevada. As project manager, Ms. Siren reviewed the final

paleontological survey report for submittal to LADPW. She also co-authored the annual report on work conducted at Path 46 for submittal to the lead agency, the BLM.

LADWP Barren Ridge Renewable Transmission Project—POWER Engineers, Kern County and Los Angeles County, California. As field manager, created a GIS with geological layers and project site data to be used in the evaluation and assessment of paleontological resources. The findings of the paleontological assessment report indicated that the potential adverse impacts to a variety of marine and non-marine sedimentary rocks could be avoided.

McCoy Solar Project, First Solar, County of Riverside, California. Managed cultural and paleontological resource staff during construction of this 250-megawatt (MW) solar photovoltaic facility located in easternmost Riverside County. As the BLM-permit holder, served as Principal Investigator for paleontology and paleontological resources compliance manager.

East County (ECO) Substation Project, San Diego Gas & Electric (SDG&E), San Diego County, California. As field manager and co-principal investigator, Ms. Siren co-authored the paleontological resources mitigation plan which was accepted by the BLM. She was also responsible for supervising the paleontological monitoring on this project located in eastern San Diego County, California.

Ocotillo Wind Energy—Ocotillo Express LLC, Imperial County, California. As field manager and co-principal investigator, responsible for obtaining the BLM permit and assisting the Project Manager in preparation of a Paleontological Monitoring and Treatment Plan for the project. Additionally responsible for oversight of paleontological monitoring personnel during construction related activities on the project.

Line 3000 In-Line Inspection Project, Southern California Gas Company (SCG), Barstow to Needles, California. As field manager and co-principal investigator, responsible for a paleontological resources assessment of the SCG Line 3000 natural gas transmission line which traverses the east-central portion of the Mojave Desert between Barstow and Needles, California.

Imperial Valley Loop, Southern California Gas Company (SCG), Brawley, Imperial County, California. As field manager, responsible for oversight of personnel conducting paleontological monitoring and fossil salvage on the project. This project involved monitoring of mass grading operations, salvage of unearthed fossil remains, laboratory preparation and curation of fossils, and preparation of a final project report. A series of fossil producing strata were discovered & collected from ~14,000 to 7,000 year old lacustrine sedimentary rocks ancient Lake Cahuilla. Recovered fossils consisted of significant fossil remains of late Pleistocene- to early Holocene-age marine invertebrates.

Kern River Gas Transmission Pipeline — Molycorp Minerals, LLC, San Bernardino County, California. As field manager and co-principal investigator, responsible for the paleontological mitigation monitoring program conducted on private and BLM land. Ms. Siren also co-authored the paleontological monitoring report on the Kern River Gas Transmission Company's Mountain Pass Lateral natural gas pipeline project in eastern San Bernardino County, California.

North South Interconnect Project, Southern California Gas Company (SCG), Riverside and San Bernardino Counties, California. As field manager and co-principal investigator, responsible for conducting the pedestrian field survey, paleontological resources assessment, implementation of the paleontological monitoring program, and written technical report of findings. The project extended from the town of White

Water, in Riverside County, California (the southern interconnect), northeast to the former town of Essex, in San Bernardino County, California (the northern interconnect).

Simbol Calipatria Plant I Project—Ecology and Environment, Inc., Imperial County, California. As field manager and co-principal investigator, responsible for oversight of field studies conducted on Energy Source LLC's property within the Salton Sea Known Geothermal Resource Area. Ms. Siren also co-authored the paleontological assessment for the project.

Hudson Ranch II Geothermal Project—Ecology and Environment, Inc., Imperial County, California. As field manager and co-principal investigator, responsible for oversight of field studies conducted as part of the paleontological assessment of the project. The paleontological assessment program included completion of a paleontological records search and literature review, completion of a field survey, and preparation of a final report summarizing findings and proposing appropriate mitigation measures to reduce potential adverse impacts to a level below significance. The findings of this paleontological assessment report indicated that the potential adverse impacts to a variety of marine and non-marine sedimentary rocks could be avoided.

Imperial to Dixieland 230kV Transmission Line and Expansion of Dixieland Substation, Imperial Irrigation District (IID), Imperial County, California. As field manager and co-principal investigator, responsible for field studies oversight and preparation of the paleontological assessment report. The paleontological assessment program included completion of a paleontological records search and literature review, completion of a field survey, and preparation of a final report summarizing findings and proposing appropriate mitigation measures to reduce potential adverse impacts to a level below significance. The findings of this paleontological assessment report indicated that the potential adverse impacts to a variety of marine and non-marine sedimentary rocks could be avoided.

California High-Speed Rail Project, Construction Package 2-3, Fresno to Bakersfield, Dragados / Flatiron Joint Venture, Fresno, Kings, Tulare and Kern Counties, California. Managed cultural and paleontological resource staff on the Fresno to Bakersfield Section of the project. Responsible for WEAP training and Paleontological Resources Mitigation and Monitoring Plan (PRMMP) consistent with the Final Environmental Impact Report (EIR) / Environmental Impact Statement (EIS) created for the project.

Valley South Subtransmission Line Project, Southern California Edison (SCE), Riverside County, California. As project manager, conducted a field survey and co-authored the paleontological resources survey report in advance of proposed construction along the approximately 17.76 miles of subtransmission line in Riverside County, California. The final PEA was written in compliance with CEQA and Riverside County guidelines for approval by the CPUC.

Stateline Solar Farm Project, First Solar, County of San Bernardino, California. As project manager and co-principal investigator, prepared the paleontological resources plan and provided technical review and editorial comments on the field survey report for this project located on BLM-managed land.

Imperial Solar Energy Center West Project, First Solar, County of Imperial, California. Managed cultural and paleontological resource staff during construction of this 250-megawatt (MW) solar photovoltaic facility located in Imperial County. Mitgation was conducted in accordance with the Conditional Use Permit (CUP) for the project, including screenwashing of sediment samples collected during excavation.

Sunrise Powerlink, San Diego Gas & Electric (SDG&E), San Diego & Imperial Counties, California. As field manager and co-principal investigator, responsible for implementation of the field mitigation

program for the project. Additionally, aided in the preparation of the SDG&E Sunrise Powerlink Paleontological Records Search, Monitoring and Treatment Plan, and co-authored Final Technical Report on paleontological resources for submittal to the BLM.

SANDAG Mid-City Bus Rapid Transit Project, City of San Diego, California. Co-authored the paleontological evaluation report for Caltrans District 11. Completed the field survey for the study, and made recommendations for future mitigation monitoring in accordance with the Standard Environmental Reference for Paleontology. Responsible for WEAP training preconstruction and paleontological resources monitoring during excavation by Granite Construction on this SANDAG project.

1902 Grandview Street, City of Oceanside, California. Provided a paleontological resources review for the tentative tract map location, including management considerations and recommendations.

Jacumba Solar, County of San Diego, California. As Senior Paleontologist, provided paleontological resources recommendations and guidelines for this project.

SR-76/I-15 Interchange Improvement Project, Caltrans, County of San Diego, California. During grading by Flatiron Construction for the Caltrans District 11 roadway improvements to the SR-76/I-15 interchange, field manager responsible for recovery of a nearly complete skull and postrcrania of a long-horned bison (*Bison latifrons)*.

Paleontological Services On-Call Contract, Caltrans, San Diego and Imperial counties, California. As field manager investigator, responsible for oversight of paleontological monitoring being conducted as part of Caltrans road improvement projects along the SR-52, SR-76, SR-78, SR-94, SR-805, SR-905, and I-15 freeways. Numerous concurrent work orders were issued and completed under the on-call contract. Also responsible for co-authoring final project reports (both mitigation and assessment).

Paleontological Services On-Call Contract, SDG&E, San Diego and Imperial counties, California. As field manager investigator, responsible for oversight of paleontological monitoring being conducted as part of several work orders for San Diego Gas & Electric. Over thirty work orders ongoing or completed under the on-call contract. Also responsible for co-authoring final project reports (both mitigation and assessment).

Thomas Jefferson School of Law Project, Thomas Jefferson School of Law, City of San Diego, California. As field manager, conducted multiple fossil salvages for this East Village project site. A mammoth skull, tusks, and partial skeleton were recovered and are currently awaiting preparation. In addition, a partial gray whale (*Eschrichtius robustus*) skeleton was discovered at the site and is housed at the museum's storage facility.

Otay Water Treatment Plant, ICF International, Inc., San Diego County, California. As field manager and co-principal investigator, Ms. Siren co-authored the paleontological resources final technical report which was accepted by the Otay Water District. She was also responsible for supervising the paleontological monitoring on this project located in eastern San Diego County, California.

Otay Ranch, Parcels B (Village 8 West) & C (Village 9), Otay Land Company, Chula Vista, California. As field manager and co-principal investigator, conducted the pedestrian field survey of an approximately 600 acre site in the City of Chula Vista. Ms. Siren also co-authored the paleontological assessment for the project.

Olympic Pointe (East and West) Project, Alta Geotechnical, Inc., Chula Vista, California. As field manager and co-principal investigator, responsible for oversight of field studies conducted as part of the paleontological mitigation program for the project. The findings of this paleontoloigcal mitigation program were included in a final technical report co-authored by Ms. Siren.

San Ysidro School District (SYSD) Vista Del Mar School, RBF, San Diego County, California. As field manager and co-principal investigator, responsible for preconstruction WEAP training and supervision of paleontological monitoring program for the project. A series of fossil producing strata were discovered & collected from approximately 2-3 million year old San Diego Formation consisted of significant fossil remains of marine invertebrates.

Portola Springs (Planning Area 6), The Irvine Company, City of Irvine, California. As project manager, provided comprehensive paleontological consultation services for a large-scale development. This project yielded fossils that dated from the Cretaceous age (over 65 million years ago) deposits through the Pleistocene age (until 11,000 years ago). Responsible for overseeing the paleontological resource management, including large fossil salvages and monitoring during rough grading. Evaluation studies are in progress and large-scale mitigation efforts are ongoing.

Holly Hills Storm Drain Project, Los Angeles Department of Public Works, Los Angeles County, California. As project manager and paleontologist, responsible for providing on-call paleontological monitoring. The scope of services included providing on-site monitoring and collection of archaeological or paleontological resources found. Evaluated and prepared salvaged fossils in compliance with CEQA guidelines. Wrote quarterly reports on the findings.

607 Kings Road, City of Newport Beach, California. Served as paleontologist for fossil salvage of a Pleistocene baleen whale skull from a private residence for the City of Newport Beach. Was instrumental in coordinating with the City, the property owner, and the Los Angeles Times journalists who covered the breaking news story.

Marblehead Coastal, SunCal, City of San Clemente, California. Served as paleontologist responsible for a paleontological assessment of the 266-acre property and oversight of paleontological resource monitoring during rough grading. Designed and implemented an archaeological survey in consultation with the California Coastal Commission (CCC) and local Native Americans. Survey methods were tailored in response to specific CCC concerns regarding ground surface visibility, historical land use, previously recorded archaeological traces, and diverse development impacts. Successfully developed a detailed archaeological, Native American, and paleontological monitoring and discoveries treatment plan to address CCC, Native American, and City of San Clemente concerns.

Pelican Hill, The Irvine Company, City of Newport Beach, California. Managed the on-site paleontological mitigation program operated by Stantec for the Pelican Hill Project in Newport Beach, Orange County, California. In accordance with local and state guidelines, supervised the recovery of over 200 fish fossils from the middle to late Miocene marine Monterey Formation, and both terrestrial and marine specimens from the overlying Pleistocene age terrace deposits.

Quail Ranch Project, Quail Ranch, City of Moreno Valley, California. Served as project paleontologist responsible for a paleontological assessment of the 200-acre property and oversight during paleontological resource monitoring of geotechnical bore hole drilling and trenching.

Shady Canyon, The Irvine Company, City of Irvine, California. Assumed supervisory role of a 4-year monitoring project during mass grading for the Shady Canyon residential community. During that time, the majority of the fossils salvaged by paleontological monitors were from the Vaqueros Formation. These marine sediments yielded a relatively complete skull of a new species of primitive baleen whale, in addition to mollusks, echinoderms, sharks, fishes, a marine bird, and mammals that lived in the early Miocene ocean, approximately 20 to 23 million years ago. The collection has been reported on and placed in the Natural History Museum of Los Angeles County at Exposition Park.

Turtle Ridge, The Irvine Company, City of Irvine, California. Supervised paleontological monitoring during rough grading for this large residential community. Monitoring personnel collected a variety of marine fossils during the course of the project. Most notable was the complete skull of a primitive tusked sea cow (*Dioplotherium)* from the Topanga Formation; this skull was prepared in the Stantec paleontological laboratory, reported on, and placed at the Smithsonian Institution, Washington, DC, for further research.

Vellano Project, Chino Hills Land West LLC, City of Chino Hills, California. Supervised paleontological monitoring services for this 570-acre property during mass grading. Over 2,000 fossil fish specimens were collected, which expanded the known species recorded from the Puente Formation. This residential community project afforded the rare opportunity to monitor Miocene sediments for the presence of marine fossils. Also collected on this project were Ice Age mega fauna remains, most notably the best-preserved Shasta ground sloth skull outside Rancho La Brea and a large bison femur. The most complete dolphin skeleton ever recovered from the Pacific region was collected during the course of this project and is described as a newly discovered species of kentriodontid dolphin by Dr. Barnes of the Natural History Museum of Los Angeles County. A replica of this animal is currently on display at the City of Chino Hills City Hall. The collection was placed at the Natural History Museum of Los Angeles County.

Relevant Previous Experience

Paleo Solutions Inc., City of Monrovia, California. Served as project manager/principal investigator of paleontology responsible for managing projects and report preparation for private and public sector projects located throughout California. (2013-2014)

San Diego Natural History Museum, City of San Diego, California. Served as paleontological field manager responsible for managing field operations and preparing reports for the Department of PaleoServices projects in Central and Southern California. (2008-2013)

Natural History Museum of Los Angeles County, City of Los Angeles, California. Served as curatorial assistant responsible for assisting collections manager with curation; is well versed in the latest preparation and casting and molding techniques. (2007-2008)

Saddleback College, City of Mission Viejo, California. Served as associate professor responsible for teaching fossil preparation techniques in addition to leading lecture classes for the Department of Geology. (2004-2008)

Stantec Consulting Inc., City of Irvine, California. Served as project manager/paleontologist responsible for managing field operations for multiple projects throughout Southern California. (2003-2008)

South Dakota School of Mines and Technology, Rapid City, South Dakota.

- Served as research scientist I. Assisted the collections manager/preparatory in several field activities, curation projects, and laboratory preparation. (Summer 2002)
- Served as graduate research assistant. Prepared, identified, mapped, and curated fossils from new bone beds located during the 2000 and 2001 summer field seasons of the Natural Resources Preservation Program (NRPP) Project. (Fall 2001 and Spring 2002; Fall 2000 and Spring 2001)
- Served as fossil resource monitor. Monitored potentially fossiliferous areas in the Badlands National Park for construction crews. (May 2001 and 2002)
- Served as co-principal investigator. Assisted with the NRPP 2001 project in the Badlands National Park by filling administrative duties, mapping using aerial photos and GPS unit, and collecting and preparing fossils for transport to the Museum of Geology in Rapid City, South Dakota. (Summer 2001)
- Served as paleontological supervisor. Interpreted fossil remains for tourists visiting an ongoing excavation site in the Badlands National Park, filled administrative duties, and collected and prepared fossils for transport to the Museum of Geology (Summer 2001).
- Served as research assistant at the Badlands National Park for Museum of Geology Bone Bed Project.. (Summer 2000)
- Served as fossil interpreter/paleontologist at the Pig Dig, Badlands National Park. (Summer 1999 and 2000)
- Served as graduate research assistant at the Museum of Geology/Department of Geology and Geological Engineering. (Fall 1999 and Spring 2001)
- Attended field paleontology course. (2000)

National Museum of Natural History, Smithsonian Institution, Invertebrate Paleobiology Department, Washington, DC. Served as a contract employee. Identified microfossil species for stable isotope analysis and sorted microfossils based on morphology for population studies. (1998–1999)

Disability Services, George Washington University, Washington, DC. Served as a tutor to students in Physical and Historical Geology. (1998-1999)

Field Paleontology in the Bahamas. *Cerion* snail fossil collection and documentation on various islands such as Cat Island and Long Island, for Stephen J. Gould. (1998)

National Science Foundation Research Experience for Undergraduates, Green River, Wyoming. Served as field participant. Prospected and collected fossils for the Natural Science Museum, Michigan. Prepared a report on the results of activities and presented it to her peers. (1997)

Vertebrate Paleontology Laboratory, National Museum of Natural History, Smithsonian Institution, Washington, DC. Served as a volunteer in the department and prepared fossil samples of vertebrates for study. (1997)

Training

- Geology field course, Lehigh University, 1999.

Publications

Black, S.A., C.L. Herbel, and R.C. Benton. 2001. "Bone Beds in the Lower Scenic Member, Brule Formation (*Oligocene*), Badlands National Park, South Dakota." Abstract. Poster presentation at the Sixty-First Annual Society of Vertebrate Paleontology Meeting, Bozeman, Montana.

Deering, M.R., L.G. Barnes, S.A. Siren, S.A. McLeod, M.O. Walsh, and K.R. Rice. 2007. "A Fossil Ziphiid Whale (*Cetacea*: *Odontoceti*) from the Latest Miocene Capistrano Formation in Southern Orange County, California." Los Angeles, California: Southern California Academy of Sciences.

Deering, M.R., M.L. Kearin, S.A. Black, and L.G. Barnes. 2004. "An Archaic Baleen-Bearing Mysticete Whale Resembling *Eomysticetus* from the Lower Miocene Vaqueros Formation in Southern California." Abstract. Western Association of Vertebrate Paleontologists, Annual Meeting, Occidental College. February 14, 2004.

Deméré, T.A., K.A. Randall, B.O. Riney, and S.A. Siren.[1] 2013. Forthcoming. "Discovery of remains of an extinct giant bison (*Bison latifrons*) in Upper Pleistocene (*Rancholabrean*) fluvial strata in the San Luis Rey River Valley, San Diego County, California, USA." In *Alternative Rocks: The Geology and Natural Resources Above and Below the San Luis Rey River Valley, Northern Dan Diego County, California*, edited by B. Olson. San Diego, California: San Diego Association of Geologists Field Trip Guide.

Herbel, C.L., R.C. Benton, and S.A. Black. 2002. "Bone Bed Surveys: Making Use of the Data." Abstract. Geological Society of America Annual Meeting, Abstracts with Programs 34, no. 6, paper no. 237–5.

Santos, Comer, K. S. Siren, A. Nouri, T. Deméré, and Randall, K. 2010. "Paleontological Sensitivity Map for San Diego County: A Categorical Risk Analysis." ESRI Users Conference, Map Gallery Poster.

Siren, S.A. 2006. "Site Analysis of the Buffalo Alley Bone Bed Located in the Lower Scenic Member of the Brule Formation (*Oligocene*), Badlands National Park, South Dakota." Abstract. Poster presentation at the Sixty-Sixth Annual Society of Vertebrate Paleontology Meeting, Ottawa, Ontario, Canada.

Awards

SDNHM Staff Appreciation Award, 2012
SDSM&T Award for Outstanding Contributions to Campus Leadership, April 2001 and 2002

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[1] Née S.A. Black.

Appendix B – Facilities with Earthen Bottoms by Zone

Name	Redbook In	Zone	InvertMat	PageName	Map
19th Street Storm Drain	1-202-6A	1	Engineered Earth	Zone 1 - 19th Street Storm Drain	1 - Zone 1 - 19th Street Storm Drain
24th Street Storm Drain	1-705-6A	1	Engineered Earth	Zone 1 - 24th Street Storm Drain	2 - Zone 1 - 24th Street Storm Drain
8th Street Basin #1	1-209-4A	1	Engineered Earth	Zone 1 - 8th Street Basin #1	3 - Zone 1 - 8th Street Basin #1
8th Street Basin #2	1-209-4B	1	Engineered Earth	Zone 1 - 8th Street Basin #2	4 - Zone 1 - 8th Street Basin #2
8th Street Basin #3	1-209-4C	1	Engineered Earth	Zone 1 - 8th Street Basin #3	5 - Zone 1 - 8th Street Basin #3
Alta Loma Basin #1 (DSOD)	1-406-3A	1	Engineered Earth	Zone 1 - Alta Loma Basin #1 (DSOD)	6 - Zone 1 - Alta Loma Basin #1 (DSOD)
Alta Loma Basin #2 (DSOD)	1-406-3B	1	Engineered Earth	Zone 1 - Alta Loma Basin #2 (DSOD)	7 - Zone 1 - Alta Loma Basin #2 (DSOD)
Alta Loma Basin #3	1-406-4C	1	Engineered Earth	Zone 1 - Alta Loma Basin #3	8 - Zone 1 - Alta Loma Basin #3
Banana Basin	1-803-4A	1	Engineered Earth	Zone 1 - Banana Basin	9 - Zone 1 - Banana Basin
Carbon Canyon Creek Channel	1-114-1B	1	Engineered Earth	Zone 1 - Carbon Canyon Creek Channel	10 - Zone 1 - Carbon Canyon Creek Channel
Chris Basin	1-501-4A	1	Engineered Earth	Zone 1 - Chris Basin	11 - Zone 1 - Chris Basin
Cucamonga Basin #6	1-306-4B	1	Engineered Earth	Zone 1 - Cucamonga Basin #6	12 - Zone 1 - Cucamonga Basin #6
Cucamonga Basin #7	1-304-4B	1	Engineered Earth	Zone 1 - Cucamonga Basin #7	13 - Zone 1 - Cucamonga Basin #7
Cucamonga Basin #8	1-304-4C	1	Engineered Earth	Zone 1 - Cucamonga Basin #8	14 - Zone 1 - Cucamonga Basin #8
Cucamonga Channel	1-312-6A	1	Engineered Earth	Zone 1 - Cucamonga Channel	15 - Zone 1 - Cucamonga Channel
Cucamonga Connector	1-312-6A	1	Engineered Earth	Zone 1 - Cucamonga Connector	16 - Zone 1 - Cucamonga Connector
Cucamonga Connector	1-312-6B	1	Engineered Earth	Zone 1 - Cucamonga Connector	16 - Zone 1 - Cucamonga Connector
Cucamonga Dam, COE (DSOD)	1-352-3A	1	Engineered Earth	Zone 1 - Cucamonga Dam, COE (DSOD)	17 - Zone 1 - Cucamonga Dam, COE (DSOD)
Cucamonga Sprdg Grnds	1-303-2A	1	Engineered Earth	Zone 1 - Cucamonga Sprdg Grnds	18 - Zone 1 - Cucamonga Sprdg Grnds
Day Creek	1-606-4A	1	Engineered Earth	Zone 1 - Day Creek	19 - Zone 1 - Day Creek
Day Creek	1-606-4B	1	Engineered Earth	Zone 1 - Day Creek	19 - Zone 1 - Day Creek

Name	Redbook In	Zone	InvertMat	PageName	Map
Day Creek Dam (DSOD)	1-608-3A	1	Engineered Earth	Zone 1 - Day Creek Dam (DSOD)	20 - Zone 1 - Day Creek Dam (DSOD)
Day Creek Sprdg Grnds	1-602-2A	1	Native (Undisturbed)	Zone 1 - Day Creek Sprdg Grnds	21 - Zone 1 - Day Creek Sprdg Grnds
Day Creek Sprdg. Basin #1	1-614-4A	1	Engineered Earth	Zone 1 - Day Creek Sprdg. Basin #1	22 - Zone 1 - Day Creek Sprdg. Basin #1
Day Creek Sprdg. Basin #2	1-614-4B	1	Engineered Earth	Zone 1 - Day Creek Sprdg. Basin #2	23 - Zone 1 - Day Creek Sprdg. Basin #2
Day Creek Sprdg. Basin #3	1-614-4C	1	Engineered Earth	Zone 1 - Day Creek Sprdg. Basin #3	24 - Zone 1 - Day Creek Sprdg. Basin #3
Day Creek Sprdg. Basin #4	1-614-4D	1	Engineered Earth	Zone 1 - Day Creek Sprdg. Basin #4	25 - Zone 1 - Day Creek Sprdg. Basin #4
Day Creek Sprdg. Basin #5	1-614-4E	1	Engineered Earth	Zone 1 - Day Creek Sprdg. Basin #5	26 - Zone 1 - Day Creek Sprdg. Basin #5
Deer Creek Channel	1-501-1A	1	Native (Undisturbed)	Zone 1 - Deer Creek Channel	27 - Zone 1 - Deer Creek Channel
Deer Creek Debris Basin, COE	1-506-3A	1	Engineered Earth	Zone 1 - Deer Creek Debris Basin, COE	28 - Zone 1 - Deer Creek Debris Basin, COE
Demens Basin #1, COE (DSOD)	1-402-3A	1	Engineered Earth	Zone 1 - Demens Basin #1, COE (DSOD)	29 - Zone 1 - Demens Basin #1, COE (DSOD)
Demens Basin Channel	1-402-1A	1	Native (Restored)	Zone 1 - Demens Basin Channel	30 - Zone 1 - Demens Basin Channel
Demens Creek Channel	1-401-1A	1	Engineered Earth	Zone 1 - Demens Creek Channel	31 - Zone 1 - Demens Creek Channel
Ely Basin #1	1-211-4A	1	Engineered Earth	Zone 1 - Ely Basin #1	32 - Zone 1 - Ely Basin #1
Ely Basin #2	1-211-4B	1	Engineered Earth	Zone 1 - Ely Basin #2	33 - Zone 1 - Ely Basin #2
English Canyon (Little Chino Creek)	1-127-1A	1	Engineered Earth	Zone 1 - English Canyon (Little Chino Creek)	34 - Zone 1 - English Canyon (Little Chino Creek)
Etiwanda Creek Channel	1-701-1F	1	Engineered Earth	Zone 1 - Etiwanda Creek Channel	35 - Zone 1 - Etiwanda Creek Channel
Etiwanda Debris Basin (Etiwanda Creek Dam)	1-707-3A	1	Engineered Earth	Zone 1 - Etiwanda Debris Basin (Etiwanda Creek Dam)	36 - Zone 1 - Etiwanda Debris Basin (Etiwanda Creek Dam)
Etiwanda Sprdg Grnds	1-702-2A	1	Native (Restored)	Zone 1 - Etiwanda Sprdg Grnds	37 - Zone 1 - Etiwanda Sprdg Grnds
Grove Avenue Basin	1-910-4A	1	Engineered Earth	Zone 1 - Grove Avenue Basin	38 - Zone 1 - Grove Avenue Basin
Hawker-Crawford	1-806-1A	1	Engineered Earth	Zone 1 - Hawker-Crawford	39 - Zone 1 - Hawker-Crawford
Hawker-Crawford Channel	1-806-1A	1	Engineered Earth	Zone 1 - Hawker-Crawford Channel	40 - Zone 1 - Hawker-Crawford Channel
Henderson Channel	1-808-1B	1	Native (Restored)	Zone 1 - Henderson Channel	41 - Zone 1 - Henderson Channel
Hickory Basin (DSOD)	1-811-3A	1	Engineered Earth	Zone 1 - Hickory Basin (DSOD)	42 - Zone 1 - Hickory Basin (DSOD)

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Hillside Basin, COE	1-552-4A	1	Engineered Earth	Zone 1 - Hillside Basin, COE	43 - Zone 1 - Hillside Basin, COE
Jurupa Basin (DSOD)	1-804-3A	1	Engineered Earth	Zone 1 - Jurupa Basin (DSOD)	44 - Zone 1 - Jurupa Basin (DSOD)
Lower Cucamonga Sprdg Grnds	1-310-2A	1	Engineered Earth	Zone 1 - Lower Cucamonga Sprdg Grnds	45 - Zone 1 - Lower Cucamonga Sprdg Grnds
Lower Cucamonga Sprdg Grnds	1-310-2B	1	Engineered Earth	Zone 1 - Lower Cucamonga Sprdg Grnds	45 - Zone 1 - Lower Cucamonga Sprdg Grnds
Lower Cucamonga Sprdg Grnds	1-310-2C	1	Engineered Earth	Zone 1 - Lower Cucamonga Sprdg Grnds	45 - Zone 1 - Lower Cucamonga Sprdg Grnds
Lower Cucamonga Sprdg Grnds	1-310-2D	1	Engineered Earth	Zone 1 - Lower Cucamonga Sprdg Grnds	45 - Zone 1 - Lower Cucamonga Sprdg Grnds
Rich Basin	1-807-4A	1	Engineered Earth	Zone 1 - Rich Basin	46 - Zone 1 - Rich Basin
Riverside Basin	1-604-4A	1	Engineered Earth	Zone 1 - Riverside Basin	47 - Zone 1 - Riverside Basin
San Antonio Heights #6, COE	1-313-4H	1	Engineered Earth	Zone 1 - San Antonio Heights #6, COE	48 - Zone 1 - San Antonio Heights #6, COE
San Antonio Heights Basin #1 (Frankish), COE	1-313-4A	1	Engineered Earth	Zone 1 - San Antonio Heights Basin #1 (Frankish), COE	49 - Zone 1 - San Antonio Heights Basin #1 (Frankish), COE
San Antonio Heights Basin #2 (Meryl), COE	1-313-4F	1	Engineered Earth	Zone 1 - San Antonio Heights Basin #2 (Meryl), COE	50 - Zone 1 - San Antonio Heights Basin #2 (Meryl), COE
San Antonio Heights Basin #3 (Cherbak), COE	1-313-4E	1	Engineered Earth	Zone 1 - San Antonio Heights Basin #3 (Cherbak), COE	51 - Zone 1 - San Antonio Heights Basin #3 (Cherbak), COE
San Antonio Heights Basin #4 (Gray), COE	1-313-4G	1	Engineered Earth	Zone 1 - San Antonio Heights Basin #4 (Gray), COE	52 - Zone 1 - San Antonio Heights Basin #4 (Gray), COE
San Antonio Heights Basin #5 (Marble), COE	1-313-4B	1	Engineered Earth	Zone 1 - San Antonio Heights Basin #5 (Marble), COE	53 - Zone 1 - San Antonio Heights Basin #5 (Marble), COE
San Antonio Heights Basin (West Frankish)	1-313-4D	1	Engineered Earth	Zone 1 - San Antonio Heights Basin (West Frankish)	54 - Zone 1 - San Antonio Heights Basin (West Frankish)
San Sevaine Basin #1	1-802-4A	1	Engineered Earth	Zone 1 - San Sevaine Basin #1	55 - Zone 1 - San Sevaine Basin #1
San Sevaine Basin #2	1-802-4B	1	Engineered Earth	Zone 1 - San Sevaine Basin #2	56 - Zone 1 - San Sevaine Basin #2
San Sevaine Basin #3	1-802-4C	1	Engineered Earth	Zone 1 - San Sevaine Basin #3	57 - Zone 1 - San Sevaine Basin #3

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San Sevaine Basin #4	1-802-4D	1	Engineered Earth	Zone 1 - San Sevaine Basin #4	58 - Zone 1 - San Sevaine Basin #4
San Sevaine Basin #5 (DSOD)	1-802-3E	1	Engineered Earth	Zone 1 - San Sevaine Basin #5 (DSOD)	59 - Zone 1 - San Sevaine Basin #5 (DSOD)
San Sevaine Sprdg Grnds	1-802-2A	1	Native (Undisturbed)	Zone 1 - San Sevaine Sprdg Grnds	60 - Zone 1 - San Sevaine Sprdg Grnds
San Sevaine Sprdg Grnds - East Levee	1-802-5D	1	Native (Restored)	Zone 1 - San Sevaine Sprdg Grnds - East Levee	61 - Zone 1 - San Sevaine Sprdg Grnds - East Levee
San Sevaine Sprdg Grnds - West Levee	1-802-5B	1	Native (Restored)	Zone 1 - San Sevaine Sprdg Grnds - West Levee	62 - Zone 1 - San Sevaine Sprdg Grnds - West Levee
San Sevaine Sprdg Grnds - West Levee	1-802-5C	1	Native (Restored)	Zone 1 - San Sevaine Sprdg Grnds - West Levee	62 - Zone 1 - San Sevaine Sprdg Grnds - West Levee
Turner Basin #1	1-504-4A	1	Engineered Earth	Zone 1 - Turner Basin #1	63 - Zone 1 - Turner Basin #1
Turner Basin #2	1-504-4B	1	Engineered Earth	Zone 1 - Turner Basin #2	64 - Zone 1 - Turner Basin #2
Turner Basin #3	1-504-4C	1	Engineered Earth	Zone 1 - Turner Basin #3	65 - Zone 1 - Turner Basin #3
Turner Basin #4	1-504-4D	1	Engineered Earth	Zone 1 - Turner Basin #4	66 - Zone 1 - Turner Basin #4
Turner Basin #5	1-504-4E	1	Engineered Earth	Zone 1 - Turner Basin #5	67 - Zone 1 - Turner Basin #5
Victorian Basin	1-703-4A	1	Engineered Earth	Zone 1 - Victorian Basin	68 - Zone 1 - Victorian Basin
West Fontana Channel	1-809-6A	1	Engineered Earth	Zone 1 - West Fontana Channel	69 - Zone 1 - West Fontana Channel
West Fontana Channel	1-809-6B	1	Engineered Earth	Zone 1 - West Fontana Channel	69 - Zone 1 - West Fontana Channel
Wineville Basin	1-603-4A	1	Engineered Earth	Zone 1 - Wineville Basin	70 - Zone 1 - Wineville Basin
29th Street Basin #1	2-371-4A	2	Engineered Earth	Zone 2 - 29th Street Basin #1	71 - Zone 2 - 29th Street Basin #1
29th Street Basin #2	2-371-4B	2	Engineered Earth	Zone 2 - 29th Street Basin #2	72 - Zone 2 - 29th Street Basin #2
29th Street Basin #3	2-371-4C	2	Engineered Earth	Zone 2 - 29th Street Basin #3	73 - Zone 2 - 29th Street Basin #3
Badger Channel	2-359-1B	2	Engineered Earth	Zone 2 - Badger Channel	74 - Zone 2 - Badger Channel
Badger Channel	2-359-1C	2	Engineered Earth	Zone 2 - Badger Channel	74 - Zone 2 - Badger Channel
Badger Sprdg Grnds-Upper	2-355-2A	2	Native (Restored)	Zone 2 - Badger Sprdg Grnds-Upper	75 - Zone 2 - Badger Sprdg Grnds-Upper
Baseline Basin #1	2-214-4A	2	Engineered Earth	Zone 2 - Baseline Basin #1	76 - Zone 2 - Baseline Basin #1
Baseline Basin #2	2-214-4B	2	Engineered Earth	Zone 2 - Baseline Basin #2	77 - Zone 2 - Baseline Basin #2

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Baseline Basin #3	2-214-4C	2	Engineered Earth	Zone 2 - Baseline Basin #3	78 - Zone 2 - Baseline Basin #3
Brush Canyon Basin	2-412-4A	2	Engineered Earth	Zone 2 - Brush Canyon Basin	79 - Zone 2 - Brush Canyon Basin
Brush Canyon Storm Drain	2-413-6A	2	Engineered Earth	Zone 2 - Brush Canyon Storm Drain	80 - Zone 2 - Brush Canyon Storm Drain
Cable Creek Channel	2-309-1A	2	Engineered Earth	Zone 2 - Cable Creek Channel	81 - Zone 2 - Cable Creek Channel
Cable Creek Channel	2-309-1B	2	Engineered Earth	Zone 2 - Cable Creek Channel	81 - Zone 2 - Cable Creek Channel
Cactus Basin #1	2-104-4A	2	Engineered Earth	Zone 2 - Cactus Basin #1	82 - Zone 2 - Cactus Basin #1
Cactus Basin #2	2-104-4B	2	Engineered Earth	Zone 2 - Cactus Basin #2	83 - Zone 2 - Cactus Basin #2
City Creek Channel	2-601-1A	2	Engineered Earth	Zone 2 - City Creek Channel	84 - Zone 2 - City Creek Channel
City Creek Channel	2-603-1A	2	Engineered Earth	Zone 2 - City Creek Channel	84 - Zone 2 - City Creek Channel
City Creek Levee, COE	2-601-1B	2	Engineered Earth	Zone 2 - City Creek Levee, COE	85 - Zone 2 - City Creek Levee, COE
City Creek Levee, COE	2-601-5A	2	Engineered Earth	Zone 2 - City Creek Levee, COE	85 - Zone 2 - City Creek Levee, COE
City Creek Levee, COE	2-601-5B	2	Engineered Earth	Zone 2 - City Creek Levee, COE	85 - Zone 2 - City Creek Levee, COE
City Creek Levee, COE	2-601-5C	2	Engineered Earth	Zone 2 - City Creek Levee, COE	85 - Zone 2 - City Creek Levee, COE
City Creek Levee, COE	2-601-5D	2	Engineered Earth	Zone 2 - City Creek Levee, COE	85 - Zone 2 - City Creek Levee, COE
Daley Basin	2-506-4A	2	Engineered Earth	Zone 2 - Daley Basin	86 - Zone 2 - Daley Basin
Del Rosa Channel (Daley Channel)	2-507-1B	2	Engineered Earth	Zone 2 - Del Rosa Channel (Daley Channel)	87 - Zone 2 - Del Rosa Channel (Daley Channel)
Devil Basin #2	2-304-4A	2	Engineered Earth	Zone 2 - Devil Basin #2	88 - Zone 2 - Devil Basin #2
Devil Basin #3	2-304-4B	2	Engineered Earth	Zone 2 - Devil Basin #3	89 - Zone 2 - Devil Basin #3
Devil Basin #5	2-304-4D	2	Engineered Earth	Zone 2 - Devil Basin #5	90 - Zone 2 - Devil Basin #5
Devil Basin #6	2-304-4E	2	Engineered Earth	Zone 2 - Devil Basin #6	91 - Zone 2 - Devil Basin #6
Devil Basin #7	2-304-4F	2	Engineered Earth	Zone 2 - Devil Basin #7	92 - Zone 2 - Devil Basin #7
Devil Canyon Dam (Basin #1) (DSOD)	2-303-3A	2	Engineered Earth	Zone 2 - Devil Canyon Dam (Basin #1) (DSOD)	93 - Zone 2 - Devil Canyon Dam (Basin #1) (DSOD)
Devil Creek	2-301-1B	2	Engineered Earth	Zone 2 - Devil Creek	94 - Zone 2 - Devil Creek
Duffy Street Storm Drain	2-223-6A	2	Engineered Earth	Zone 2 - Duffy Street Storm Drain	95 - Zone 2 - Duffy Street Storm Drain

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East Badger Basin & Spillway	2-354-4A	2	Engineered Earth	Zone 2 - East Badger Basin & Spillway	96 - Zone 2 - East Badger Basin & Spillway
East Rialto Storm Drain	2-105-6C	2	Engineered Earth	Zone 2 - East Rialto Storm Drain	97 - Zone 2 - East Rialto Storm Drain
Harrison Basin	2-414-4A	2	Engineered Earth	Zone 2 - Harrison Basin	98 - Zone 2 - Harrison Basin
Island Levee, COE	2-207-5A	2	Native (Restored)	Zone 2 - Island Levee, COE	99 - Zone 2 - Island Levee, COE
Island Levee, COE	2-207-5B	2	Native (Restored)	Zone 2 - Island Levee, COE	99 - Zone 2 - Island Levee, COE
Lemon Basin	2-511-4A	2	Engineered Earth	Zone 2 - Lemon Basin	100 - Zone 2 - Lemon Basin
Linden Basin	2-103-4A	2	Engineered Earth	Zone 2 - Linden Basin	101 - Zone 2 - Linden Basin
Little Mountain Dam (DSOD)	2-365-3A	2	Engineered Earth	Zone 2 - Little Mountain Dam (DSOD)	102 - Zone 2 - Little Mountain Dam (DSOD)
Little Sand Canyon Basin	2-510-4A	2	Engineered Earth	Zone 2 - Little Sand Canyon Basin	103 - Zone 2 - Little Sand Canyon Basin
Little Sand Creek	2-509-1C	2	Engineered Earth	Zone 2 - Little Sand Creek	104 - Zone 2 - Little Sand Creek
Lynwood Basin #1	2-420-4A	2	Engineered Earth	Zone 2 - Lynwood Basin #1	105 - Zone 2 - Lynwood Basin #1
Lynwood Basin #2	2-420-4B	2	Engineered Earth	Zone 2 - Lynwood Basin #2	106 - Zone 2 - Lynwood Basin #2
Lynwood Basin #3	2-420-4C	2	Engineered Earth	Zone 2 - Lynwood Basin #3	107 - Zone 2 - Lynwood Basin #3
Lynwood Basin #4	2-420-4D	2	Engineered Earth	Zone 2 - Lynwood Basin #4	108 - Zone 2 - Lynwood Basin #4
Lytle Creek Gatehouse, COE	2-211-5A	2	Native (Restored)	Zone 2 - Lytle Creek Gatehouse, COE	109 - Zone 2 - Lytle Creek Gatehouse, COE
Lytle Creek Levee, COE	2-206-5A	2	Native (Restored)	Zone 2 - Lytle Creek Levee, COE	110 - Zone 2 - Lytle Creek Levee, COE
Macy Basin	2-216-4A	2	Engineered Earth	Zone 2 - Macy Basin	111 - Zone 2 - Macy Basin
Macy Storm Drain	2-217-6A	2	Engineered Earth	Zone 2 - Macy Storm Drain	112 - Zone 2 - Macy Storm Drain
McQuiddy-Severance Diversion Channel	2-351-1A	2	Native (Restored)	Zone 2 - McQuiddy-Severance Diversion Channel	113 - Zone 2 - McQuiddy-Severance Diversion Channel
Merrill Basin	2-102-4A	2	Engineered Earth	Zone 2 - Merrill Basin	114 - Zone 2 - Merrill Basin
Mill Basin	2-107-4A	2	Engineered Earth	Zone 2 - Mill Basin	115 - Zone 2 - Mill Basin
Muscoy Groin #1, COE	2-209-5A	2	Native (Restored)	Zone 2 - Muscoy Groin #1, COE	116 - Zone 2 - Muscoy Groin #1, COE
Muscoy Groin #2, COE	2-209-5B	2	Native (Restored)	Zone 2 - Muscoy Groin #2, COE	117 - Zone 2 - Muscoy Groin #2, COE

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Muscoy Groin #3, COE	2-209-5C	2	Native (Restored)	Zone 2 - Muscoy Groin #3, COE	118 - Zone 2 - Muscoy Groin #3, COE
Muscoy Groin #4, COE	2-209-5D	2	Native (Restored)	Zone 2 - Muscoy Groin #4, COE	119 - Zone 2 - Muscoy Groin #4, COE
Muscoy Groin #5, COE	2-209-5E	2	Native (Restored)	Zone 2 - Muscoy Groin #5, COE	120 - Zone 2 - Muscoy Groin #5, COE
Muscoy Levee, COE	2-210-5A	2	Native (Restored)	Zone 2 - Muscoy Levee, COE	121 - Zone 2 - Muscoy Levee, COE
Muscoy Levee, COE	2-210-5B	2	Native (Restored)	Zone 2 - Muscoy Levee, COE	121 - Zone 2 - Muscoy Levee, COE
Muscoy Levee, COE	2-210-5C	2	Native (Restored)	Zone 2 - Muscoy Levee, COE	121 - Zone 2 - Muscoy Levee, COE
Nealey's Corner Drain	2-222-6A	2	Engineered Earth	Zone 2 - Nealey's Corner Drain	122 - Zone 2 - Nealey's Corner Drain
North Badger Basin	2-358-4A	2	Engineered Earth	Zone 2 - North Badger Basin	123 - Zone 2 - North Badger Basin
Patton Basin	2-504-4A	2	Engineered Earth	Zone 2 - Patton Basin	124 - Zone 2 - Patton Basin
Pepper Basin	2-106-4A	2	Engineered Earth	Zone 2 - Pepper Basin	125 - Zone 2 - Pepper Basin
Perris Hill Basin	2-508-4A	2	Engineered Earth	Zone 2 - Perris Hill Basin	126 - Zone 2 - Perris Hill Basin
Plunge Creek	2-605-1A	2	Native (Undisturbed)	Zone 2 - Plunge Creek	127 - Zone 2 - Plunge Creek
Randall Basin	2-113-4A	2	Engineered Earth	Zone 2 - Randall Basin	128 - Zone 2 - Randall Basin
Reche Canyon Creek	2-702-1A	2	Engineered Earth	Zone 2 - Reche Canyon Creek	129 - Zone 2 - Reche Canyon Creek
Reche Canyon Creek	2-702-1B	2	Engineered Earth	Zone 2 - Reche Canyon Creek	129 - Zone 2 - Reche Canyon Creek
Reche Canyon Creek	2-702-1C	2	Engineered Earth	Zone 2 - Reche Canyon Creek	129 - Zone 2 - Reche Canyon Creek
Rialto Channel	2-120-1A	2	Engineered Earth	Zone 2 - Rialto Channel	130 - Zone 2 - Rialto Channel
Rialto Channel	2-120-1D	2	Engineered Earth	Zone 2 - Rialto Channel	130 - Zone 2 - Rialto Channel
Riverside Groin #1, COE	2-205-5A	2	Native (Restored)	Zone 2 - Riverside Groin #1, COE	131 - Zone 2 - Riverside Groin #1, COE
Riverside Groin #2, COE	2-205-5B	2	Native (Restored)	Zone 2 - Riverside Groin #2, COE	132 - Zone 2 - Riverside Groin #2, COE
Riverside Groin #3, COE	2-205-5C	2	Native (Restored)	Zone 2 - Riverside Groin #3, COE	133 - Zone 2 - Riverside Groin #3, COE
Riverside Groin #4, COE	2-205-5D	2	Native (Restored)	Zone 2 - Riverside Groin #4, COE	134 - Zone 2 - Riverside Groin #4, COE
Riverside Groin #5, COE	2-205-5E	2	Native (Restored)	Zone 2 - Riverside Groin #5, COE	135 - Zone 2 - Riverside Groin #5, COE
Sand Canyon Basin	2-503-4A	2	Engineered Earth	Zone 2 - Sand Canyon Basin	136 - Zone 2 - Sand Canyon Basin
Sand Creek	2-502-1B	2	Engineered Earth	Zone 2 - Sand Creek	137 - Zone 2 - Sand Creek

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Santa Ana River	2-701-1C	2	Native (Restored)	Zone 2 - Santa Ana River	138 - Zone 2 - Santa Ana River
Santa Ana River (Incl. COE)	2-701-1A	2	Native (Restored)	Zone 2 - Santa Ana River (Incl. COE)	139 - Zone 2 - Santa Ana River (Incl. COE)
Santa Ana River (Incl. COE)	2-701-1B	2	Native (Restored)	Zone 2 - Santa Ana River (Incl. COE)	139 - Zone 2 - Santa Ana River (Incl. COE)
South Badger Basin	2-356-4A	2	Engineered Earth	Zone 2 - South Badger Basin	140 - Zone 2 - South Badger Basin
Sweetwater Basin	2-362-4A	2	Engineered Earth	Zone 2 - Sweetwater Basin	141 - Zone 2 - Sweetwater Basin
Sweetwater Channel	2-361-1A	2	Engineered Earth	Zone 2 - Sweetwater Channel	142 - Zone 2 - Sweetwater Channel
Sycamore Basin	2-352-4A	2	Engineered Earth	Zone 2 - Sycamore Basin	143 - Zone 2 - Sycamore Basin
Sycamore Diversion Channel	2-353-1A	2	Engineered Earth	Zone 2 - Sycamore Diversion Channel	144 - Zone 2 - Sycamore Diversion Channel
Twin Creek	2-405-1A	2	Engineered Earth	Zone 2 - Twin Creek	145 - Zone 2 - Twin Creek
Twin Creek Channel Improved, COE	2-409-1D	2	Engineered Earth	Zone 2 - Twin Creek Channel Improved, COE	146 - Zone 2 - Twin Creek Channel Improved, COE
Twin Creek Levees, COE	2-408-5B	2	Engineered Earth	Zone 2 - Twin Creek Levees, COE	147 - Zone 2 - Twin Creek Levees, COE
Twin Creek Sprdg Grnds	2-406-2A	2	Engineered Earth	Zone 2 - Twin Creek Sprdg Grnds	148 - Zone 2 - Twin Creek Sprdg Grnds
Upper Devore Levee, COE	2-208-5A	2	Native (Restored)	Zone 2 - Upper Devore Levee, COE	149 - Zone 2 - Upper Devore Levee, COE
Upper Warm Creek Channel	2-501-1A	2	Engineered Earth	Zone 2 - Upper Warm Creek Channel	150 - Zone 2 - Upper Warm Creek Channel
Warm Creek Channel	2-411-1A	2	Engineered Earth	Zone 2 - Warm Creek Channel	151 - Zone 2 - Warm Creek Channel
Warm Creek Conservation Basin #2	2-421-4B	2	Engineered Earth	Zone 2 - Warm Creek Conservation Basin #2	152 - Zone 2 - Warm Creek Conservation Basin #2
Warm Creek Conservation Basin #3	2-421-4C	2	Engineered Earth	Zone 2 - Warm Creek Conservation Basin #3	153 - Zone 2 - Warm Creek Conservation Basin #3
Warm Creek Conservation Basin #4	2-421-4D	2	Engineered Earth	Zone 2 - Warm Creek Conservation Basin #4	154 - Zone 2 - Warm Creek Conservation Basin #4
Warm Creek Levee, COE	2-212-5A	2	Engineered Earth	Zone 2 - Warm Creek Levee, COE	155 - Zone 2 - Warm Creek Levee, COE
Waterman Basin #1	2-403-4A	2	Engineered Earth	Zone 2 - Waterman Basin #1	156 - Zone 2 - Waterman Basin #1
Waterman Basin #2	2-403-4B	2	Engineered Earth	Zone 2 - Waterman Basin #2	157 - Zone 2 - Waterman Basin #2
Waterman Basin #3	2-403-4C	2	Engineered Earth	Zone 2 - Waterman Basin #3	158 - Zone 2 - Waterman Basin #3
Waterman Basin #4	2-403-4D	2	Engineered Earth	Zone 2 - Waterman Basin #4	159 - Zone 2 - Waterman Basin #4

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Waterman Creek	2-401-1B	2	Native (Restored)	Zone 2 - Waterman Creek	160 - Zone 2 - Waterman Creek
Waterman Levee, COE	2-408-5A	2	Engineered Earth	Zone 2 - Waterman Levee, COE	161 - Zone 2 - Waterman Levee, COE
West Badger Basin	2-360-4A	2	Native (Restored)	Zone 2 - West Badger Basin	162 - Zone 2 - West Badger Basin
West Fontana Channel	2-109-6A	2	Engineered Earth	Zone 2 - West Fontana Channel	163 - Zone 2 - West Fontana Channel
Wiggins Basin #1	2-305-4A	2	Engineered Earth	Zone 2 - Wiggins Basin #1	164 - Zone 2 - Wiggins Basin #1
Baldridge Creek	3-701-1B	3	Engineered Earth	Zone 3 - Baldridge Creek	165 - Zone 3 - Baldridge Creek
Birch Creek	3-612-1A	3	Engineered Earth	Zone 3 - Birch Creek	166 - Zone 3 - Birch Creek
Brown Ditch Basin	3-404-4A	3	Engineered Earth	Zone 3 - Brown Ditch Basin	167 - Zone 3 - Brown Ditch Basin
City Creek	3-301-1B	3	Engineered Earth	Zone 3 - City Creek	168 - Zone 3 - City Creek
City Creek	3-301-1C	3	Native (Restored)	Zone 3 - City Creek	168 - Zone 3 - City Creek
City Creek Levee - East Bank	3-301-5D	3	Engineered Earth	Zone 3 - City Creek Levee - East Bank	169 - Zone 3 - City Creek Levee - East Bank
City Creek Levee - East Bank (COE)	3-301-5C	3	Engineered Earth	Zone 3 - City Creek Levee - East Bank (COE)	170 - Zone 3 - City Creek Levee - East Bank (COE)
City Creek Levee - West Bank	3-301-5B	3	Engineered Earth	Zone 3 - City Creek Levee - West Bank	171 - Zone 3 - City Creek Levee - West Bank
City Creek Levee - West Bank (COE)	3-301-5A	3	Engineered Earth	Zone 3 - City Creek Levee - West Bank (COE)	172 - Zone 3 - City Creek Levee - West Bank (COE)
Cook Canyon Basin	3-305-4A	3	Engineered Earth	Zone 3 - Cook Canyon Basin	173 - Zone 3 - Cook Canyon Basin
Dynamite Basin	3-304-4A	3	Engineered Earth	Zone 3 - Dynamite Basin	174 - Zone 3 - Dynamite Basin
East Highland SD	3-206-1A	3	Engineered Earth	Zone 3 - East Highland SD	175 - Zone 3 - East Highland SD
Elder Creek	3-205-1A	3	Native (Restored)	Zone 3 - Elder Creek	176 - Zone 3 - Elder Creek
Elder Creek	3-205-1C	3	Engineered Earth	Zone 3 - Elder Creek	176 - Zone 3 - Elder Creek
Elder Creek Basin	3-205-4A	3	Engineered Earth	Zone 3 - Elder Creek Basin	177 - Zone 3 - Elder Creek Basin
Gateway Wash	3-615-1A	3	Engineered Earth	Zone 3 - Gateway Wash	178 - Zone 3 - Gateway Wash
Loma Linda SD	3-402-6A	3	Engineered Earth	Zone 3 - Loma Linda SD	179 - Zone 3 - Loma Linda SD
Loma Linda SD	3-402-6B	3	Engineered Earth	Zone 3 - Loma Linda SD	179 - Zone 3 - Loma Linda SD

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Mill Creek	3-801-1A	3	Native (Undisturbed)	Zone 3 - Mill Creek	180 - Zone 3 - Mill Creek
Mill Creek	3-801-1C	3	Native (Restored)	Zone 3 - Mill Creek	180 - Zone 3 - Mill Creek
Mill Creek	3-801-1D	3	Native (Restored)	Zone 3 - Mill Creek	180 - Zone 3 - Mill Creek
Mission Channel	3-501-1A	3	Engineered Earth	Zone 3 - Mission Channel	181 - Zone 3 - Mission Channel
Mission Channel	3-501-1B	3	Engineered Earth	Zone 3 - Mission Channel	181 - Zone 3 - Mission Channel
Mission Channel	3-501-1C	3	Engineered Earth	Zone 3 - Mission Channel	181 - Zone 3 - Mission Channel
Morrey Arroyo	3-502-1A	3	Engineered Earth	Zone 3 - Morrey Arroyo	182 - Zone 3 - Morrey Arroyo
Morrey Arroyo	3-502-1B	3	Engineered Earth	Zone 3 - Morrey Arroyo	182 - Zone 3 - Morrey Arroyo
Oak Creek Basin	3-204-4A	3	Engineered Earth	Zone 3 - Oak Creek Basin	183 - Zone 3 - Oak Creek Basin
Oak Glen Creek	3-603-1A	3	Engineered Earth	Zone 3 - Oak Glen Creek	184 - Zone 3 - Oak Glen Creek
Oak Glen Creek	3-603-1B	3	Engineered Earth	Zone 3 - Oak Glen Creek	184 - Zone 3 - Oak Glen Creek
Oak Glen Creek Basin #1	3-603-4A	3	Engineered Earth	Zone 3 - Oak Glen Creek Basin #1	185 - Zone 3 - Oak Glen Creek Basin #1
Oak Glen Creek Basin #2	3-603-4B	3	Engineered Earth	Zone 3 - Oak Glen Creek Basin #2	186 - Zone 3 - Oak Glen Creek Basin #2
Oak Glen Creek Basin #3	3-603-4C	3	Engineered Earth	Zone 3 - Oak Glen Creek Basin #3	187 - Zone 3 - Oak Glen Creek Basin #3
Plunge Creek	3-201-1B	3	Engineered Earth	Zone 3 - Plunge Creek	188 - Zone 3 - Plunge Creek
Plunge Creek	3-201-1C	3	Engineered Earth	Zone 3 - Plunge Creek	188 - Zone 3 - Plunge Creek
Plunge Creek Spreading Grounds	3-202-2A	3	Native (Restored)	Zone 3 - Plunge Creek Spreading Grounds	189 - Zone 3 - Plunge Creek Spreading Grounds
Plunge Creek Spreading Grounds	3-202-2B	3	Native (Restored)	Zone 3 - Plunge Creek Spreading Grounds	189 - Zone 3 - Plunge Creek Spreading Grounds
Potato Creek Spreading Grounds	3-605-2A	3	Native (Undisturbed)	Zone 3 - Potato Creek Spreading Grounds	190 - Zone 3 - Potato Creek Spreading Grounds
San Bernardino Avenue SD	3-403-6A	3	Engineered Earth	Zone 3 - San Bernardino Avenue SD	191 - Zone 3 - San Bernardino Avenue SD
Santa Ana River	3-101-1A	3	Native (Restored)	Zone 3 - Santa Ana River	192 - Zone 3 - Santa Ana River
Santa Ana River	3-101-1B	3	Native (Undisturbed)	Zone 3 - Santa Ana River	192 - Zone 3 - Santa Ana River
Santa Ana River	3-101-1C	3	Native (Undisturbed)	Zone 3 - Santa Ana River	192 - Zone 3 - Santa Ana River

Name	Redbook In	Zone	InvertMat	PageName	Map
Santa Ana River	3-101-1D	3	Native (Restored)	Zone 3 - Santa Ana River	192 - Zone 3 - Santa Ana River
Santa Ana River	3-101-1E	3	Native (Restored)	Zone 3 - Santa Ana River	192 - Zone 3 - Santa Ana River
Santa Ana River (Incl. COE)	3-101-1F	3	Native (Restored)	Zone 3 - Santa Ana River (Incl. COE)	193 - Zone 3 - Santa Ana River (Incl. COE)
Seven Oaks Dam, COE (DSOD)	3-104-3A	3	Engineered Earth	Zone 3 - Seven Oaks Dam, COE (DSOD)	194 - Zone 3 - Seven Oaks Dam, COE (DSOD)
Small Canyon Dam (DSOD)	3-302-3A	3	Engineered Earth	Zone 3 - Small Canyon Dam (DSOD)	195 - Zone 3 - Small Canyon Dam (DSOD)
Small Canyon Diversion Channel	3-303-1A	3	Engineered Earth	Zone 3 - Small Canyon Diversion Channel	196 - Zone 3 - Small Canyon Diversion Channel
Water Canyon Creek	3-608-1F	3	Engineered Earth	Zone 3 - Water Canyon Creek	197 - Zone 3 - Water Canyon Creek
Wildwood Basin #1	3-608-4B	3	Engineered Earth	Zone 3 - Wildwood Basin #1	198 - Zone 3 - Wildwood Basin #1
Wildwood Basin #2	3-608-4C	3	Engineered Earth	Zone 3 - Wildwood Basin #2	199 - Zone 3 - Wildwood Basin #2
Wildwood Creek	3-608-1B	3	Engineered Earth	Zone 3 - Wildwood Creek	200 - Zone 3 - Wildwood Creek
Wildwood Creek	3-608-1D	3	Engineered Earth	Zone 3 - Wildwood Creek	200 - Zone 3 - Wildwood Creek
Wildwood Debris Basin	3-608-4A	3	Engineered Earth	Zone 3 - Wildwood Debris Basin	201 - Zone 3 - Wildwood Debris Basin
Wilson Creek	3-601-1A	3	Native (Restored)	Zone 3 - Wilson Creek	202 - Zone 3 - Wilson Creek
Wilson Creek	3-601-1C	3	Engineered Earth	Zone 3 - Wilson Creek	202 - Zone 3 - Wilson Creek
Wilson Creek Basin #1	3-602-4A	3	Engineered Earth	Zone 3 - Wilson Creek Basin #1	203 - Zone 3 - Wilson Creek Basin #1
Wilson Creek Basin #2	3-602-4B	3	Engineered Earth	Zone 3 - Wilson Creek Basin #2	204 - Zone 3 - Wilson Creek Basin #2
Wilson Creek Basin #3	3-602-4C	3	Engineered Earth	Zone 3 - Wilson Creek Basin #3	205 - Zone 3 - Wilson Creek Basin #3
Wilson Creek Basin #4	3-602-4D	3	Engineered Earth	Zone 3 - Wilson Creek Basin #4	206 - Zone 3 - Wilson Creek Basin #4
Wilson Creek Sprdg Grnds (Wilson Basins)	3-602-2E	3	Engineered Earth	Zone 3 - Wilson Creek Sprdg Grnds (Wilson Basins)	207 - Zone 3 - Wilson Creek Sprdg Grnds (Wilson Basins)
Yucaipa Creek	3-613-1C	3	Engineered Earth	Zone 3 - Yucaipa Creek	208 - Zone 3 - Yucaipa Creek
Zanja Creek	3-501-1E	3	Engineered Earth	Zone 3 - Zanja Creek	209 - Zone 3 - Zanja Creek
Zanja Creek	3-501-1F	3	Engineered Earth	Zone 3 - Zanja Creek	209 - Zone 3 - Zanja Creek
Zanja Creek	3-501-1G	3	Engineered Earth	Zone 3 - Zanja Creek	209 - Zone 3 - Zanja Creek
Adelanto East Channel	4-355-1A	4	Native (Restored)	Zone 4 - Adelanto East Channel	210 - Zone 4 - Adelanto East Channel

Name	Redbook In	Zone	InvertMat	PageName	Map
Antelope Creek Wash	4-103-1A	4	Engineered Earth	Zone 4 - Antelope Creek Wash	211 - Zone 4 - Antelope Creek Wash
Arrowhead Channel	4-503-1A	4	Engineered Earth	Zone 4 - Arrowhead Channel	212 - Zone 4 - Arrowhead Channel
Baker Levee	4-802-5A	4	Engineered Earth	Zone 4 - Baker Levee	213 - Zone 4 - Baker Levee
Buckthorn Wash	4-107-1A	4	Engineered Earth	Zone 4 - Buckthorn Wash	214 - Zone 4 - Buckthorn Wash
Buckthorn Wash	4-107-1C	4	Engineered Earth	Zone 4 - Buckthorn Wash	214 - Zone 4 - Buckthorn Wash
D Street SD	4-401-6A	4	Engineered Earth	Zone 4 - D Street SD	215 - Zone 4 - D Street SD
Daggett Channel	4-710-1A	4	Engineered Earth	Zone 4 - Daggett Channel	216 - Zone 4 - Daggett Channel
Daggett Channel	4-710-1B	4	Engineered Earth	Zone 4 - Daggett Channel	216 - Zone 4 - Daggett Channel
East Baker Channel	4-801-1A	4	Engineered Earth	Zone 4 - East Baker Channel	217 - Zone 4 - East Baker Channel
El Evado Channel	4-405-1A	4	Engineered Earth	Zone 4 - El Evado Channel	218 - Zone 4 - El Evado Channel
Flume Creek	4-352-1A	4	Engineered Earth	Zone 4 - Flume Creek	219 - Zone 4 - Flume Creek
Fremont Wash	4-108-1A	4	Engineered Earth	Zone 4 - Fremont Wash	220 - Zone 4 - Fremont Wash
Fremont Wash	4-108-1B	4	Engineered Earth	Zone 4 - Fremont Wash	220 - Zone 4 - Fremont Wash
Heath Creek	4-353-1A	4	Engineered Earth	Zone 4 - Heath Creek	221 - Zone 4 - Heath Creek
Hesperia East Channel	4-452-1A	4	Engineered Earth	Zone 4 - Hesperia East Channel	222 - Zone 4 - Hesperia East Channel
Lenwood Channel	4-601-1A	4	Engineered Earth	Zone 4 - Lenwood Channel	223 - Zone 4 - Lenwood Channel
Lenwood Channel	4-601-1B	4	Engineered Earth	Zone 4 - Lenwood Channel	223 - Zone 4 - Lenwood Channel
Lenwood Spreading Grounds	4-602-2A	4	Native (Restored)	Zone 4 - Lenwood Spreading Grounds	224 - Zone 4 - Lenwood Spreading Grounds
Mojave Drive Channel	4-402-1A	4	Engineered Earth	Zone 4 - Mojave Drive Channel	225 - Zone 4 - Mojave Drive Channel
Mojave Drive Channel	4-402-1B	4	Engineered Earth	Zone 4 - Mojave Drive Channel	225 - Zone 4 - Mojave Drive Channel
Mojave River	4-101-1C	4	Native (Undisturbed)	Zone 4 - Mojave River	226 - Zone 4 - Mojave River
Mojave River	4-101-1D	4	Native (Restored)	Zone 4 - Mojave River	226 - Zone 4 - Mojave River
Mojave River	4-101-1E	4	Native (Restored)	Zone 4 - Mojave River	226 - Zone 4 - Mojave River
Mojave River	4-101-1F	4	Native (Restored)	Zone 4 - Mojave River	226 - Zone 4 - Mojave River

Name	Redbook In	Zone	InvertMat	PageName	Map
Mojave River	4-101-1G	4	Engineered Earth	Zone 4 - Mojave River	226 - Zone 4 - Mojave River
Mojave River	4-101-1H	4	Native (Undisturbed)	Zone 4 - Mojave River	226 - Zone 4 - Mojave River
Mojave River	4-101-1I	4	Native (Undisturbed)	Zone 4 - Mojave River	226 - Zone 4 - Mojave River
Mojave River	4-101-1J	4	Engineered Earth	Zone 4 - Mojave River	226 - Zone 4 - Mojave River
Mojave River	4-101-1K	4	Native (Restored)	Zone 4 - Mojave River	226 - Zone 4 - Mojave River
Mojave River	4-101-1L	4	Native (Restored)	Zone 4 - Mojave River	226 - Zone 4 - Mojave River
Mojave River	4-101-1M	4	Native (Undisturbed)	Zone 4 - Mojave River	226 - Zone 4 - Mojave River
Mojave River	4-101-1N	4	Native (Undisturbed)	Zone 4 - Mojave River	226 - Zone 4 - Mojave River
North Barstow Channel	4-502-1A	4	Engineered Earth	Zone 4 - North Barstow Channel	227 - Zone 4 - North Barstow Channel
Oro Grande Wash	4-106-1A	4	Engineered Earth	Zone 4 - Oro Grande Wash	228 - Zone 4 - Oro Grande Wash
Sheep Creek	4-354-1A	4	Engineered Earth	Zone 4 - Sheep Creek	229 - Zone 4 - Sheep Creek
Sheep Creek	4-354-1B	4	Engineered Earth	Zone 4 - Sheep Creek	229 - Zone 4 - Sheep Creek
Sheep Creek	4-354-1D	4	Engineered Earth	Zone 4 - Sheep Creek	229 - Zone 4 - Sheep Creek
Southwest Barstow Channel	4-501-1A	4	Engineered Earth	Zone 4 - Southwest Barstow Channel	230 - Zone 4 - Southwest Barstow Channel
Southwest Barstow Channel	4-501-1C	4	Engineered Earth	Zone 4 - Southwest Barstow Channel	230 - Zone 4 - Southwest Barstow Channel
Southwest Barstow Channel	4-501-1D	4	Engineered Earth	Zone 4 - Southwest Barstow Channel	230 - Zone 4 - Southwest Barstow Channel
Southwest Barstow Channel	4-501-1E	4	Engineered Earth	Zone 4 - Southwest Barstow Channel	230 - Zone 4 - Southwest Barstow Channel
Swarthout Creek	4-351-1A	4	Engineered Earth	Zone 4 - Swarthout Creek	231 - Zone 4 - Swarthout Creek
Turner Ditch	4-109-6A	4	Native (Restored)	Zone 4 - Turner Ditch	232 - Zone 4 - Turner Ditch
Waterman Road Basin	4-507-4A	4	Engineered Earth	Zone 4 - Waterman Road Basin	233 - Zone 4 - Waterman Road Basin
Waterman Road Channel	4-507-1A	4	Engineered Earth	Zone 4 - Waterman Road Channel	234 - Zone 4 - Waterman Road Channel
Yermo Flood Channel	4-701-1B	4	Engineered Earth	Zone 4 - Yermo Flood Channel	235 - Zone 4 - Yermo Flood Channel
Yermo Flood Channel	4-701-1C	4	Engineered Earth	Zone 4 - Yermo Flood Channel	235 - Zone 4 - Yermo Flood Channel

Name	Redbook In	Zone	InvertMat	PageName	Map
Green Valley Creek	5-211-1A	5	Native (Restored)	Zone 5 - Green Valley Creek	236 - Zone 5 - Green Valley Creek
Green Valley Creek	5-211-1B	5	Native (Restored)	Zone 5 - Green Valley Creek	236 - Zone 5 - Green Valley Creek
Hunsaker Drain	5-510-1A	5	Native (Restored)	Zone 5 - Hunsaker Drain	237 - Zone 5 - Hunsaker Drain
Seeley Creek	5-312-1B	5	Native (Restored)	Zone 5 - Seeley Creek	238 - Zone 5 - Seeley Creek
Sequoia Drain	5-314-1A	5	Native (Restored)	Zone 5 - Sequoia Drain	239 - Zone 5 - Sequoia Drain
"S" Street Channel Inlet Levee	6-603-5B	6	Native (Restored)	Zone 6 - "S" Street Channel Inlet Levee	240 - Zone 6 - "S" Street Channel Inlet Levee
29 Palms Flood Channel	6-402-1A	6	Engineered Earth	Zone 6 - 29 Palms Flood Channel	241 - Zone 6 - 29 Palms Flood Channel
29 Palms Flood Channel	6-402-1B	6	Engineered Earth	Zone 6 - 29 Palms Flood Channel	241 - Zone 6 - 29 Palms Flood Channel
29 Palms Flood Channel	6-402-1C	6	Engineered Earth	Zone 6 - 29 Palms Flood Channel	241 - Zone 6 - 29 Palms Flood Channel
29 Palms Flood Channel	6-402-1D	6	Engineered Earth	Zone 6 - 29 Palms Flood Channel	241 - Zone 6 - 29 Palms Flood Channel
29 Palms Flood Channel	6-402-1E	6	Engineered Earth	Zone 6 - 29 Palms Flood Channel	241 - Zone 6 - 29 Palms Flood Channel
49 Palms Spreading Grounds	6-401-2A	6	Engineered Earth	Zone 6 - 49 Palms Spreading Grounds	242 - Zone 6 - 49 Palms Spreading Grounds
Argus Channel	6-802-1A	6	Engineered Earth	Zone 6 - Argus Channel	243 - Zone 6 - Argus Channel
Borosolvay Channel	6-805-1A	6	Engineered Earth	Zone 6 - Borosolvay Channel	244 - Zone 6 - Borosolvay Channel
Borosolvay Channel	6-805-1B	6	Engineered Earth	Zone 6 - Borosolvay Channel	244 - Zone 6 - Borosolvay Channel
Burnt Mountain Wash	6-459-1A	6	Engineered Earth	Zone 6 - Burnt Mountain Wash	245 - Zone 6 - Burnt Mountain Wash
Church Street Channel	6-486-1A	6	Engineered Earth	Zone 6 - Church Street Channel	246 - Zone 6 - Church Street Channel
Covington Wash Channel	6-457-1A	6	Engineered Earth	Zone 6 - Covington Wash Channel	247 - Zone 6 - Covington Wash Channel
Donnell Basin	6-402-4A	6	Engineered Earth	Zone 6 - Donnell Basin	248 - Zone 6 - Donnell Basin
Eagle Pass Levee, COE	6-603-5A	6	Native (Restored)	Zone 6 - Eagle Pass Levee, COE	249 - Zone 6 - Eagle Pass Levee, COE
Grout Creek	6-703-1A	6	Engineered Earth	Zone 6 - Grout Creek	250 - Zone 6 - Grout Creek
High School Channel	6-458-1B	6	Engineered Earth	Zone 6 - High School Channel	251 - Zone 6 - High School Channel
Hospital Channel	6-458-1A	6	Engineered Earth	Zone 6 - Hospital Channel	252 - Zone 6 - Hospital Channel
Juanita Drainage Ditch	6-401-1A	6	Engineered Earth	Zone 6 - Juanita Drainage Ditch	253 - Zone 6 - Juanita Drainage Ditch

Name	Redbook In	Zone	InvertMat	PageName	Map
Little Morongo Creek	6-501-1A	6	Engineered Earth	Zone 6 - Little Morongo Creek	254 - Zone 6 - Little Morongo Creek
Long Canyon Basin	6-485-4A	6	Engineered Earth	Zone 6 - Long Canyon Basin	255 - Zone 6 - Long Canyon Basin
Long Canyon Channel	6-456-1A	6	Engineered Earth	Zone 6 - Long Canyon Channel	256 - Zone 6 - Long Canyon Channel
Lucerne Valley Channel	6-301-1B	6	Engineered Earth	Zone 6 - Lucerne Valley Channel	257 - Zone 6 - Lucerne Valley Channel
Needles Basin #1	6-602-4A	6	Engineered Earth	Zone 6 - Needles Basin #1	258 - Zone 6 - Needles Basin #1
Needles Basin #2	6-602-4B	6	Engineered Earth	Zone 6 - Needles Basin #2	259 - Zone 6 - Needles Basin #2
Needles Basin #3	6-602-4C	6	Engineered Earth	Zone 6 - Needles Basin #3	260 - Zone 6 - Needles Basin #3
Needles Basin #4	6-602-4D	6	Engineered Earth	Zone 6 - Needles Basin #4	261 - Zone 6 - Needles Basin #4
Needles Basin #5	6-602-4E	6	Engineered Earth	Zone 6 - Needles Basin #5	262 - Zone 6 - Needles Basin #5
Needles Flood Channel	6-601-1A	6	Engineered Earth	Zone 6 - Needles Flood Channel	263 - Zone 6 - Needles Flood Channel
Needles Riverview Levee	6-608-5A	6	Native (Restored)	Zone 6 - Needles Riverview Levee	264 - Zone 6 - Needles Riverview Levee
North Needles Basin	6-609-4A	6	Engineered Earth	Zone 6 - North Needles Basin	265 - Zone 6 - North Needles Basin
Old Woman Springs Basin	6-454-4A	6	Engineered Earth	Zone 6 - Old Woman Springs Basin	266 - Zone 6 - Old Woman Springs Basin
Old Woman Springs Creek	6-454-1A	6	Engineered Earth	Zone 6 - Old Woman Springs Creek	267 - Zone 6 - Old Woman Springs Creek
Pinto Cove Creek	6-403-1B	6	Engineered Earth	Zone 6 - Pinto Cove Creek	268 - Zone 6 - Pinto Cove Creek
Quail Wash	6-452-1A	6	Engineered Earth	Zone 6 - Quail Wash	269 - Zone 6 - Quail Wash
Quail Wash Levee, COE	6-453-5A	6	Engineered Earth	Zone 6 - Quail Wash Levee, COE	270 - Zone 6 - Quail Wash Levee, COE
Rathbone Creek	6-704-1A	6	Engineered Earth	Zone 6 - Rathbone Creek	271 - Zone 6 - Rathbone Creek
Rathbone Creek (Rathbun Creek)	6-704-1B	6	Engineered Earth	Zone 6 - Rathbone Creek (Rathbun Creek)	272 - Zone 6 - Rathbone Creek (Rathbun Creek)
Rockcrusher and Trona Flood Channels	6-803-1B	6	Engineered Earth	Zone 6 - Rockcrusher and Trona Flood Channels	273 - Zone 6 - Rockcrusher and Trona Flood Channels
Rockcrusher Channel	6-804-1A	6	Engineered Earth	Zone 6 - Rockcrusher Channel	274 - Zone 6 - Rockcrusher Channel
Sand Canyon Creek	6-704-1D	6	Engineered Earth	Zone 6 - Sand Canyon Creek	275 - Zone 6 - Sand Canyon Creek
South Trona Channel	6-801-1A	6	Engineered Earth	Zone 6 - South Trona Channel	276 - Zone 6 - South Trona Channel
Trona Flood Channel	6-803-1A	6	Engineered Earth	Zone 6 - Trona Flood Channel	277 - Zone 6 - Trona Flood Channel

Name	Redbook In	Zone	InvertMat	PageName	Map
Van Dusen Creek (Low Flow)	6-705-1B	6	Engineered Earth	Zone 6 - Van Dusen Creek (Low Flow)	278 - Zone 6 - Van Dusen Creek (Low Flow)
Yucca Creek	6-451-1A	6	Engineered Earth	Zone 6 - Yucca Creek	279 - Zone 6 - Yucca Creek
Yucca Creek	6-451-1B	6	Engineered Earth	Zone 6 - Yucca Creek	279 - Zone 6 - Yucca Creek
Yucca Creek	6-451-1C	6	Engineered Earth	Zone 6 - Yucca Creek	279 - Zone 6 - Yucca Creek

Appendix C – California Paleontological Legislation

State of California Legislation

The following state laws and regulations are applicable or potentially applicable to projects crossing State lands.

California Environmental Quality Act of 1970 (CEQA, 13 PRC, 2100, et seq.). Requires identification of potential adverse impacts of a project to any object or site of scientific importance (Div. 1, PRC 5020.1(b)).

The California Environmental Quality Act (Chapter 1, Section 21002) states that:

> *it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.*

Guidelines for the Implementation of the California Environmental Quality Act, as amended May 10, 1980 (14 Cal. Admin. Code: 15000, et seq.). Requires mitigation of adverse impacts to a Paleontological site from development on public land by construction monitoring.

The CEQA Guidelines (Article 1, Section 15002(a)(3)) state that CEQA is intended to: prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.

Guidelines for the Implementation of CEQA, 1992, Appendix G, section J (Significant effects). CEQA Guidelines, Appendix G, states, in part, that: A project will "normally" have a significant effect on the environment if it, among other things, will disrupt or adversely affect … a paleontological site except as part of a scientific study. If paleontological resources are identified during the Preliminary Environmental Analysis Report (PEAR), or other initial project scoping studies, as being within the proposed project area, the sponsoring agency must take those resources into consideration when evaluating project effects. The level of consideration may vary with the importance of the resource.

Periodic review of CEQA-related court cases for decisions related to paleontology is also recommended. These cases can be found at the California Environmental Resources Evaluation System (CERES) web site.

California Environmental Quality Act, State of California Public Resources Code, 2100-21177 as amended January 1, 1999, Appendix G Environmental Checklist Form. Impacts to known, important paleontological resources are specifically covered under CEQA as potentially significant effects, i.e., the project will have a significant effect on the environment. Specifically, each California project must answer the question: Cultural Resource - would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature? There are four possible answers: Potentially Significant Impact, Potentially Significant Unless Mitigation Incorporated, Less than Significant Impact, and No Impact.

California Coastal Act. The California Coastal Act authorizes, in part, the California Coastal Commission (CCC) to review permit applications for development within the coastal zone and, where necessary, to require reasonable mitigation measures to offset effects of that development. Permits for development are issued with "special conditions" to ensure implementation of these mitigation measures.

Section 30244 of the Act, "Archaeological or Paleontological Resources," states that: Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

If the CCC determines that a paleontological resource is present within an applicant's proposed project area, they generally look for evidence that the applicant has taken the resource into consideration, e.g., through formal survey by a professional paleontologist with implementation of resulting recommendations. If a paleontological site is present, special permit conditions may range from avoidance of the site to construction monitoring and/or salvage of significant fossils. This approach virtually parallels the level of protection afforded to paleontological resources by CEQA. Additionally, the CCC relies heavily on project sponsoring or permitting agencies to ensure compliance with CEQA (and consequently, the California Coastal Act).

Warren-Alquist Act (PRC 25000 et seq.). Requires the California Energy Commission to evaluate energy facility sitting in unique areas of scientific concern (Section 26627)

Public Resources Code, Section 5097.5 (State 1965, c. 1136, p. 2792). Section 50987.5 of the California Public Code Section states: No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.

As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, Caltrans as well as local project proponents, are required to comply with PRC 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others.

Public Resources Code, Section 30244. Requires reasonable mitigation of adverse impacts to paleontological resources from development on public land.

California Administrative Code. Four sections of the California Administrative Code (Title 14, State Division of Beaches and Parks) administered by the California Department of Parks and Recreation CDPR) address paleontological resources. These include:

Section 4306: Geological Features - "No person shall destroy, disturb, mutilate, or remove earth, sand, gravel, oil, minerals, rocks, or features of caves."

Section 4307: Archaeological Features - "No person shall remove, injure, disfigure, deface, or destroy any object of paleontological, archaeological, or historical interest or value."

Section 4308: Property - "No person shall disturb, destroy, remove, deface, or injure any property of the state park system. No person shall cut, carve, paint, mark, paste, or fasten on any tree, fence, wall, building, monument, or other property in the state parks, any bill, advertisement, or inscription."

Section 4309: Special Permits - "Upon a finding that it will be for the best interest of the state park system and for state park purposes, the director may grant a permit to remove, treat, disturb, or destroy plants or animals or geological, historical, archaeological, or paleontological materials; and any person who has been properly granted such a permit shall to that extent not be liable for prosecution for violation of the foregoing."

These sections of the California Administrative Code establish authority and processes to protect paleontological resources while allowing mitigation through the permit process.

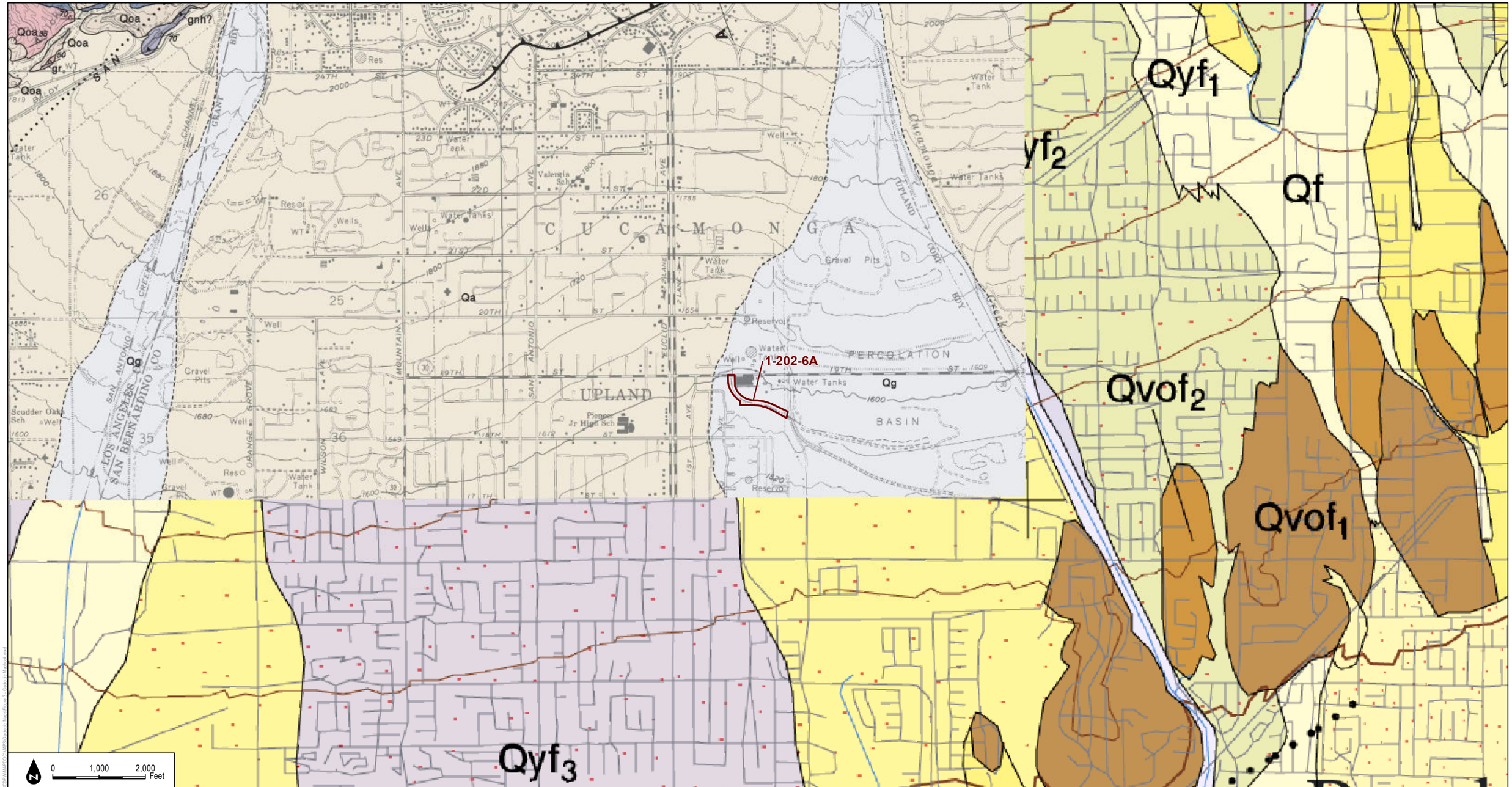
Local Laws and Regulations

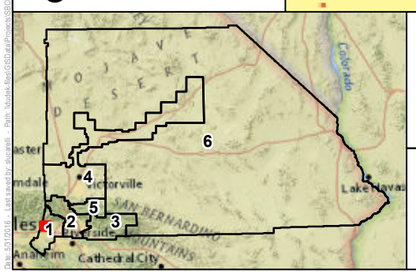
Various cities and counties have passed ordinances and resolutions related to paleontological resources within their jurisdictions. Examples include the Counties of Orange, Riverside, and San Bernardino and the cities of San Diego, Carlsbad, Palmdale, and Chula Vista. These regulations generally provide additional guidance on assessment and treatment measures for projects subject to CEQA compliance. Project staff members should periodically coordinate with local entities to update their knowledge of local requirements.

Additional Reference

Additional information is posted at the SVP website. In the event that a project involves lands administered by either Federal or State entities, the local offices of those organizations should also be contacted for guidance and direction.

Appendix D – Geological Mapping by Facility





Redbook Polygons

1:24,000

DUDEK

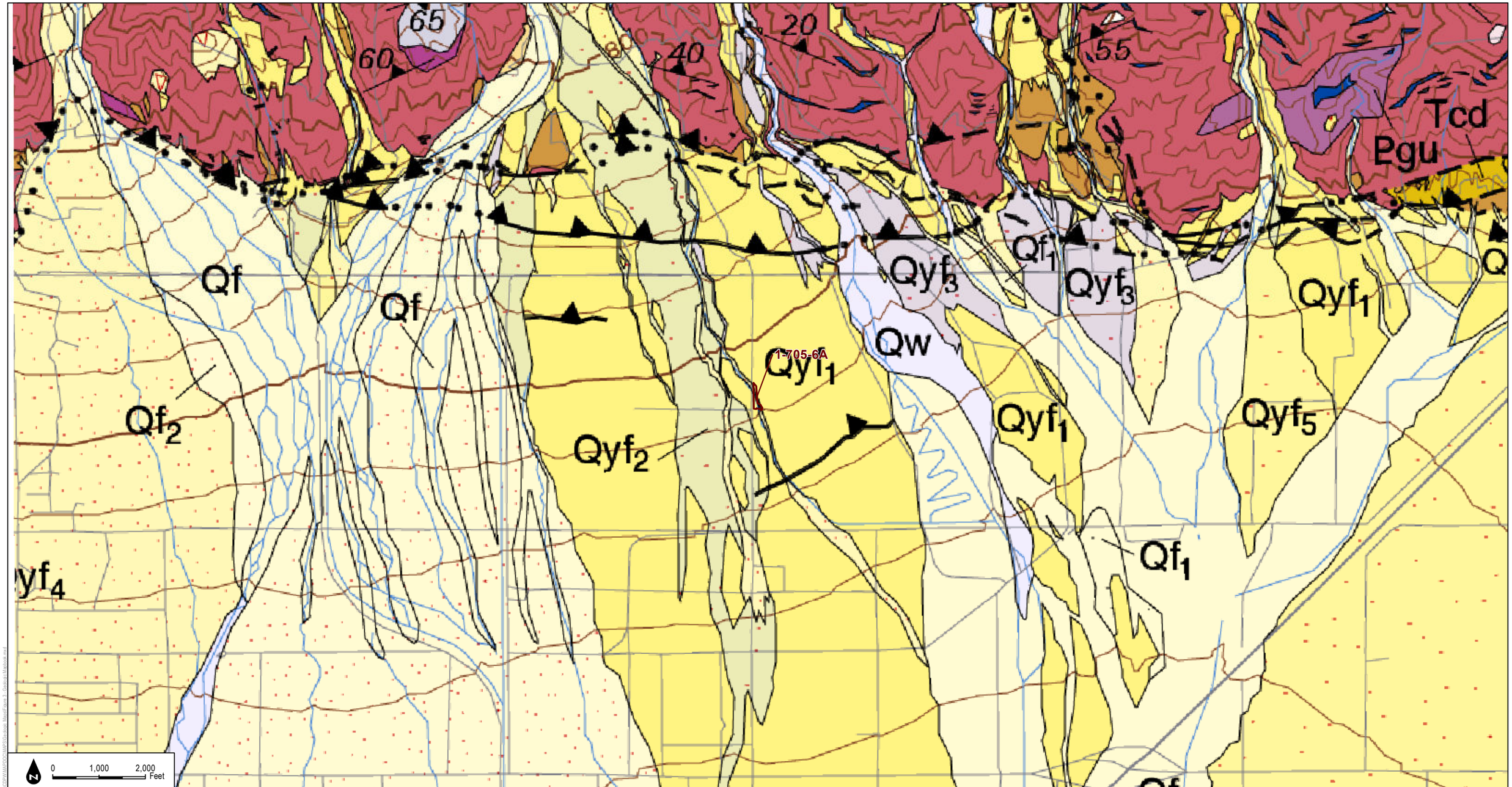
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

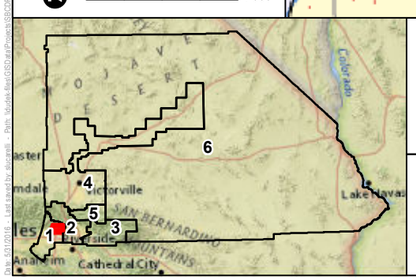
MAP 1

Zone 1 - 19th Street Storm Drain

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

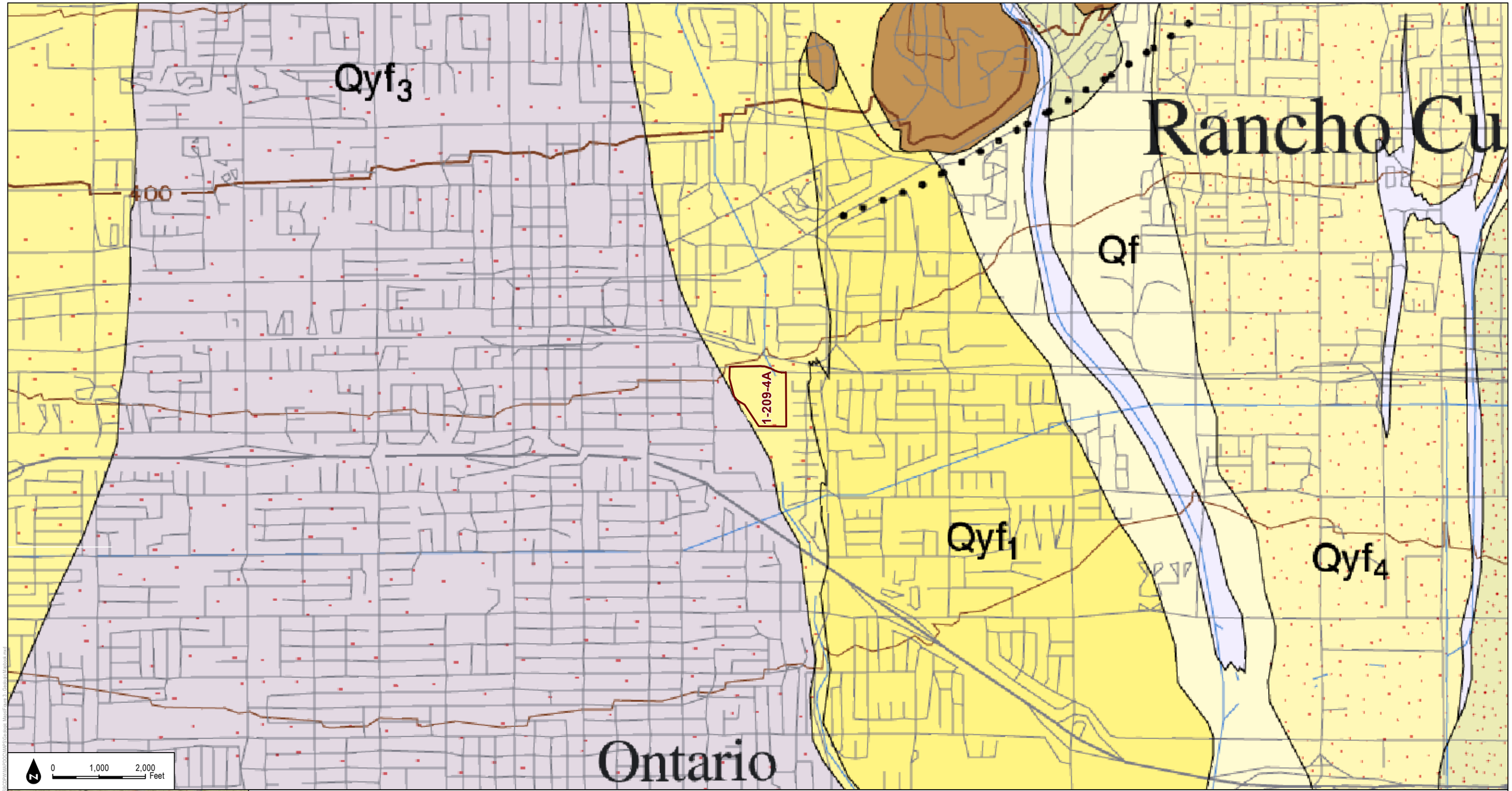
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

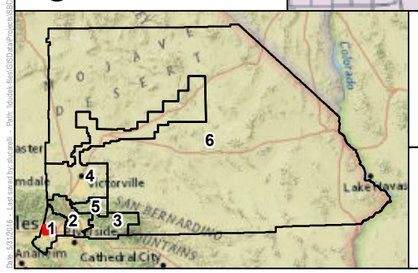
MAP 2

Zone 1 - 24th Street Storm Drain

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

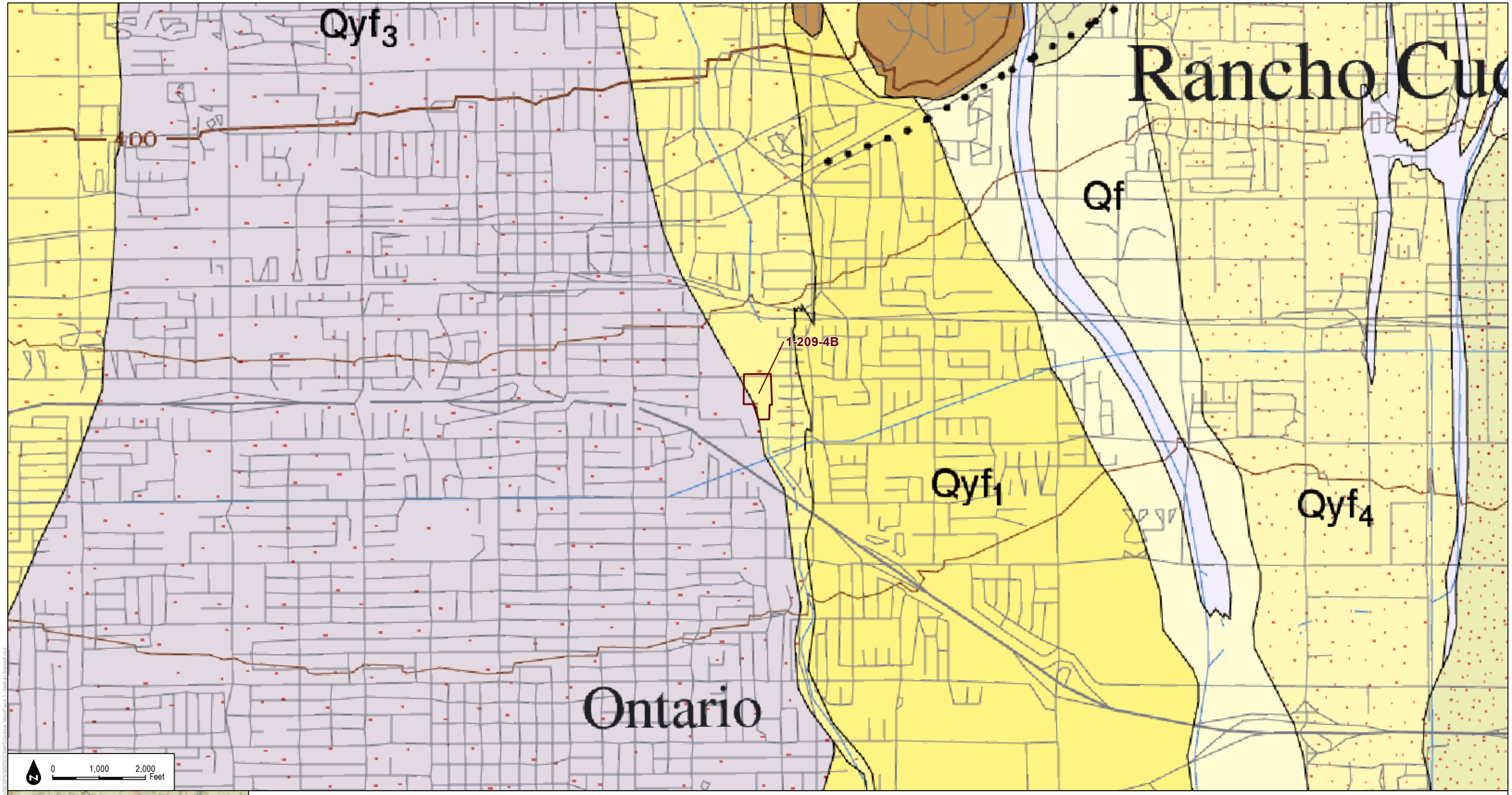
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

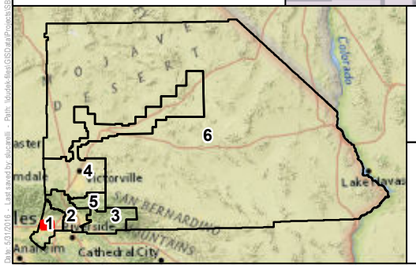
MAP 3

Zone 1 - 8th Street Basin #1

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

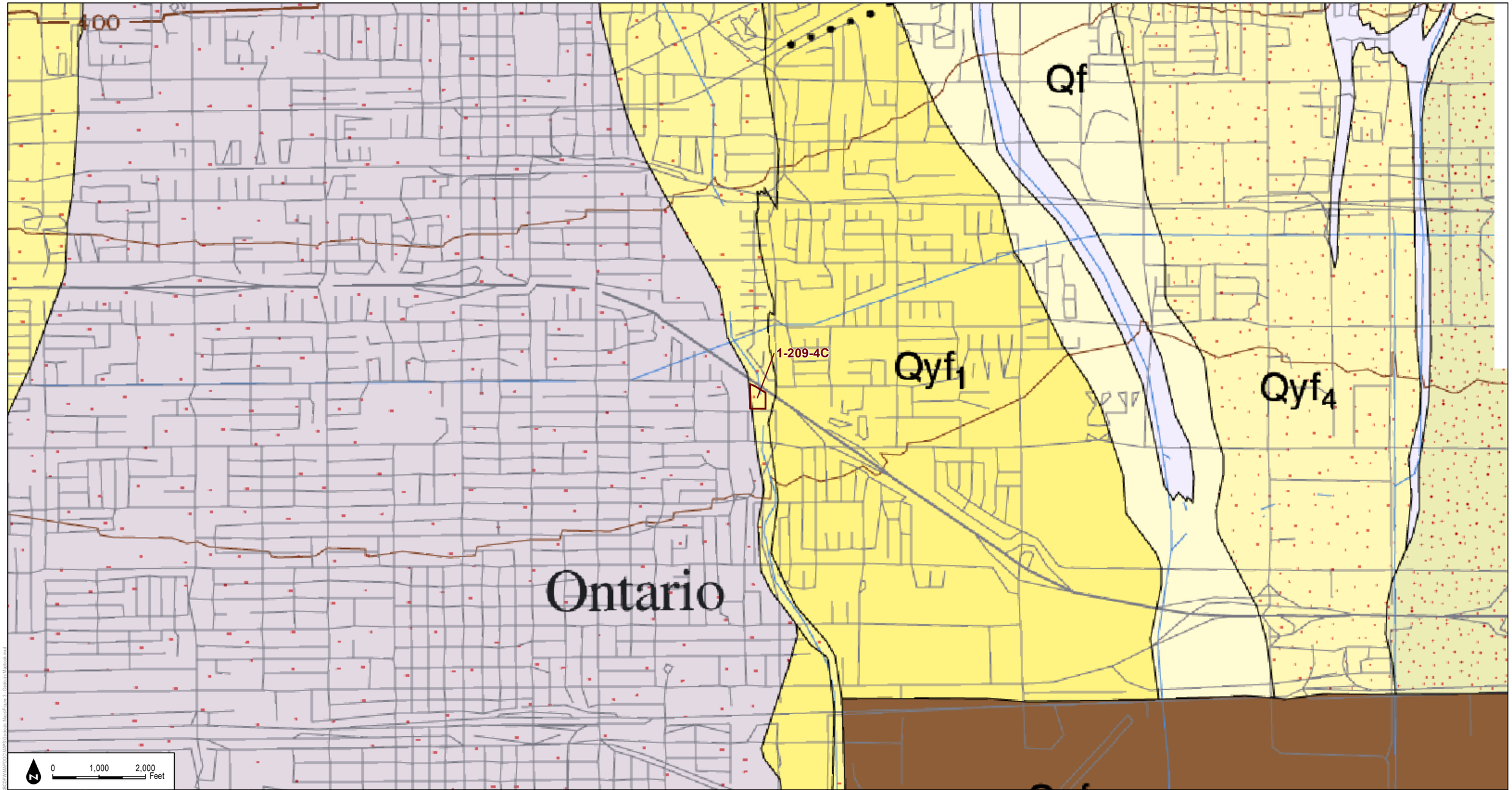
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

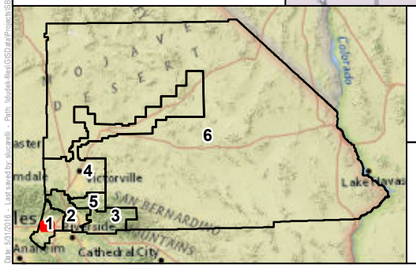
MAP 4

Zone 1 - 8th Street Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

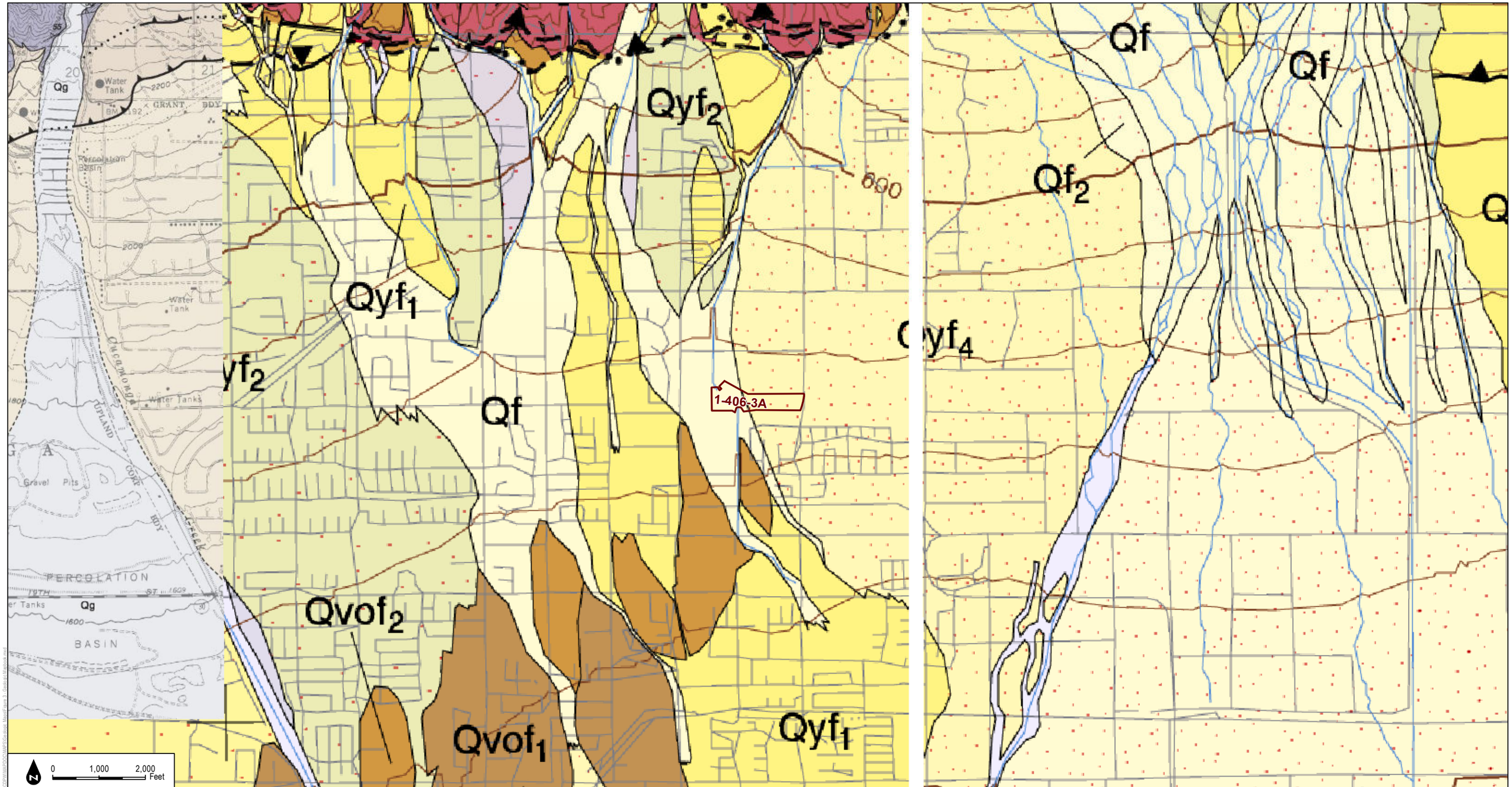
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

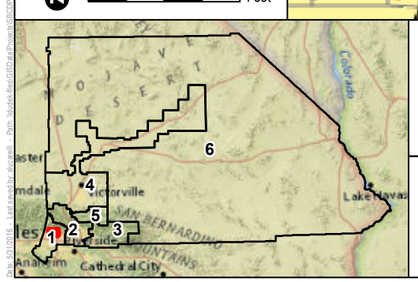
MAP 5

Zone 1 - 8th Street Basin #3

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

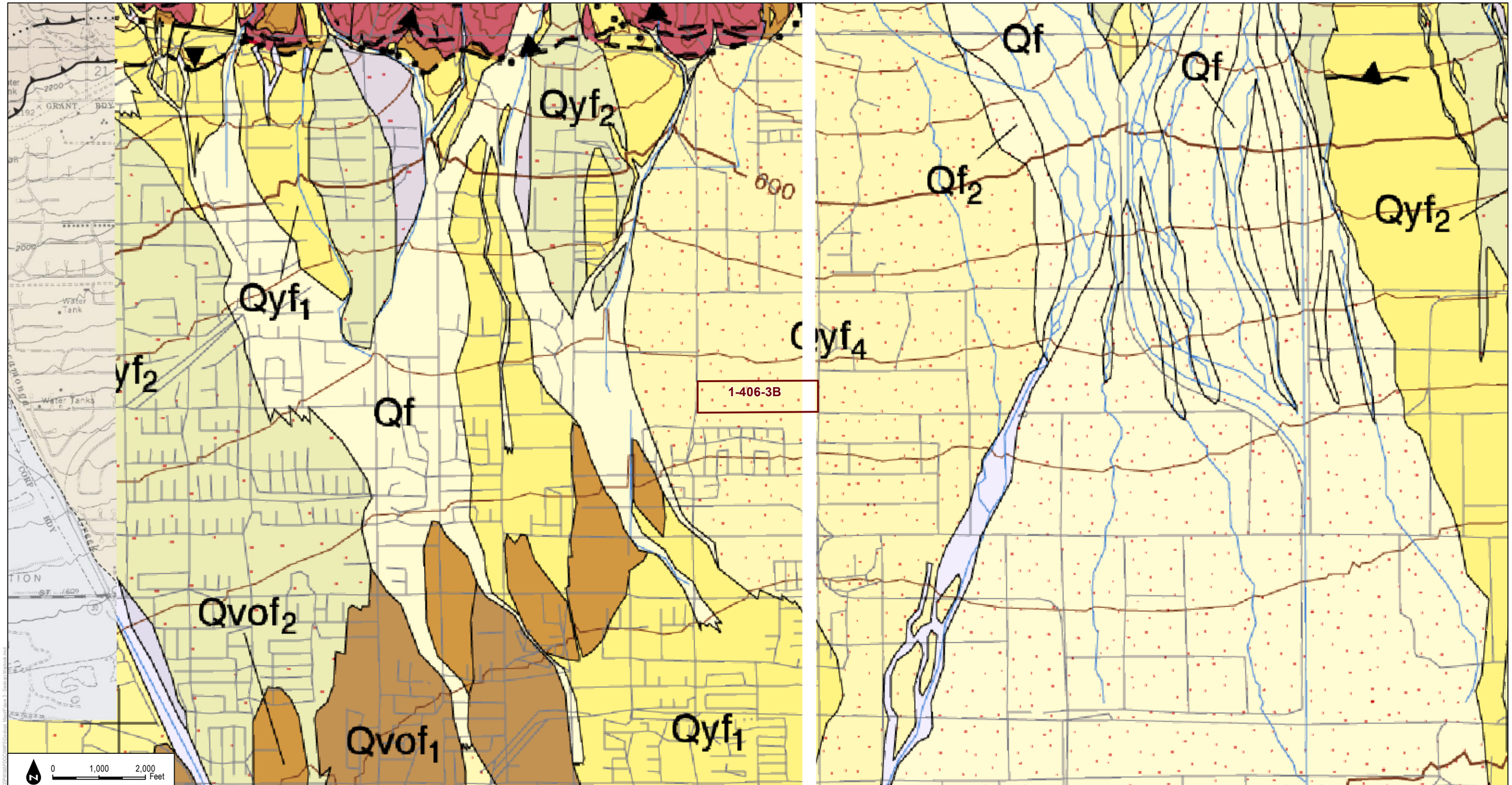
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

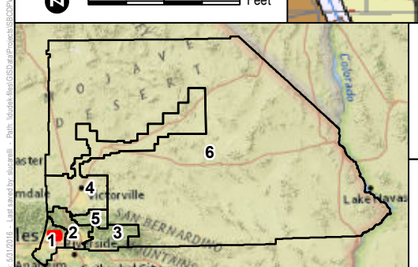
MAP 6

Zone 1 - Alta Loma Basin #1 (DSOD)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

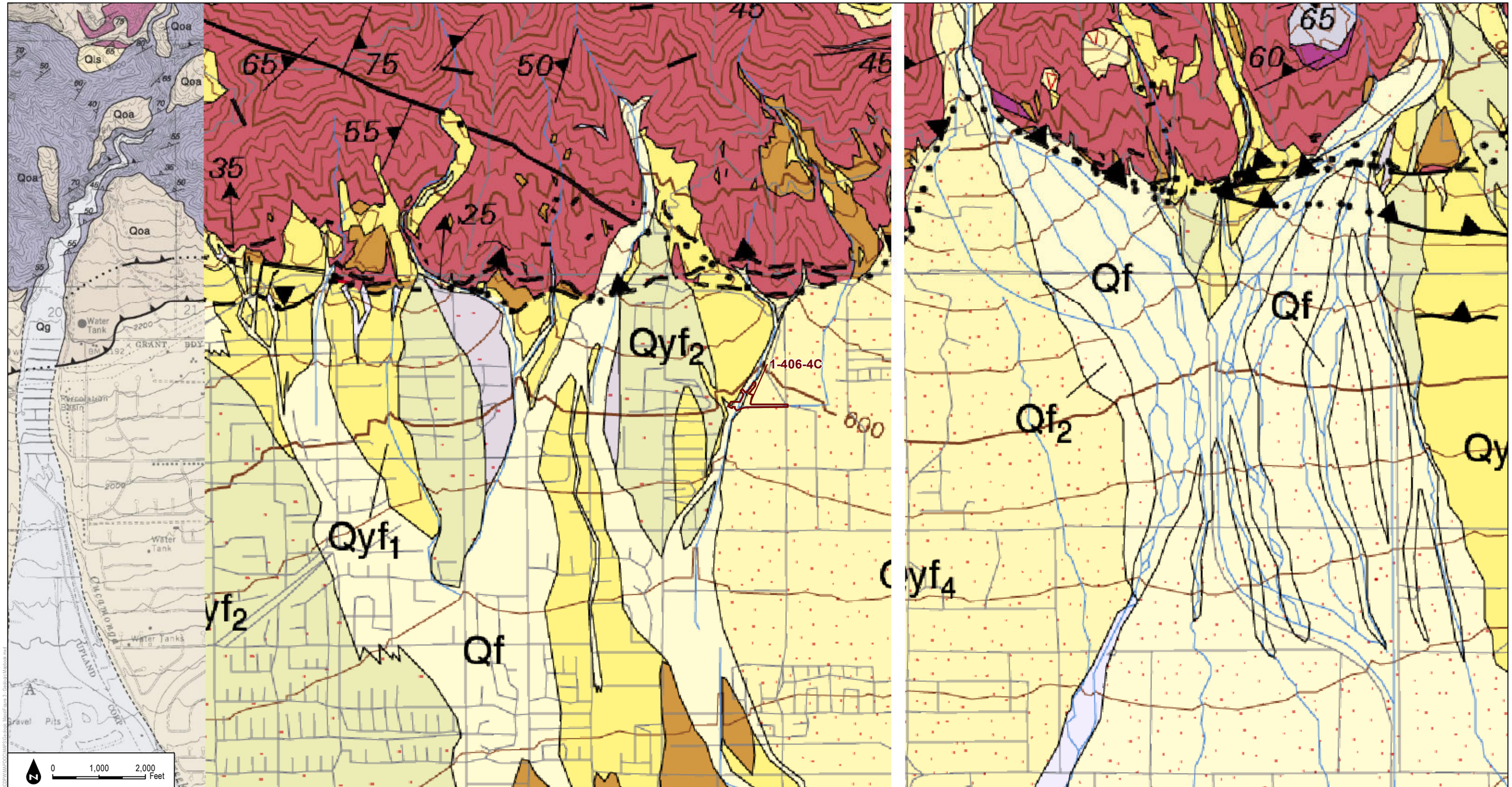
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

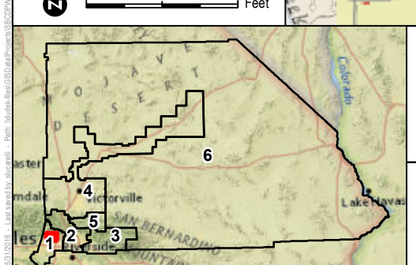
MAP 7

Zone 1 - Alta Loma Basin #2 (DSOD)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

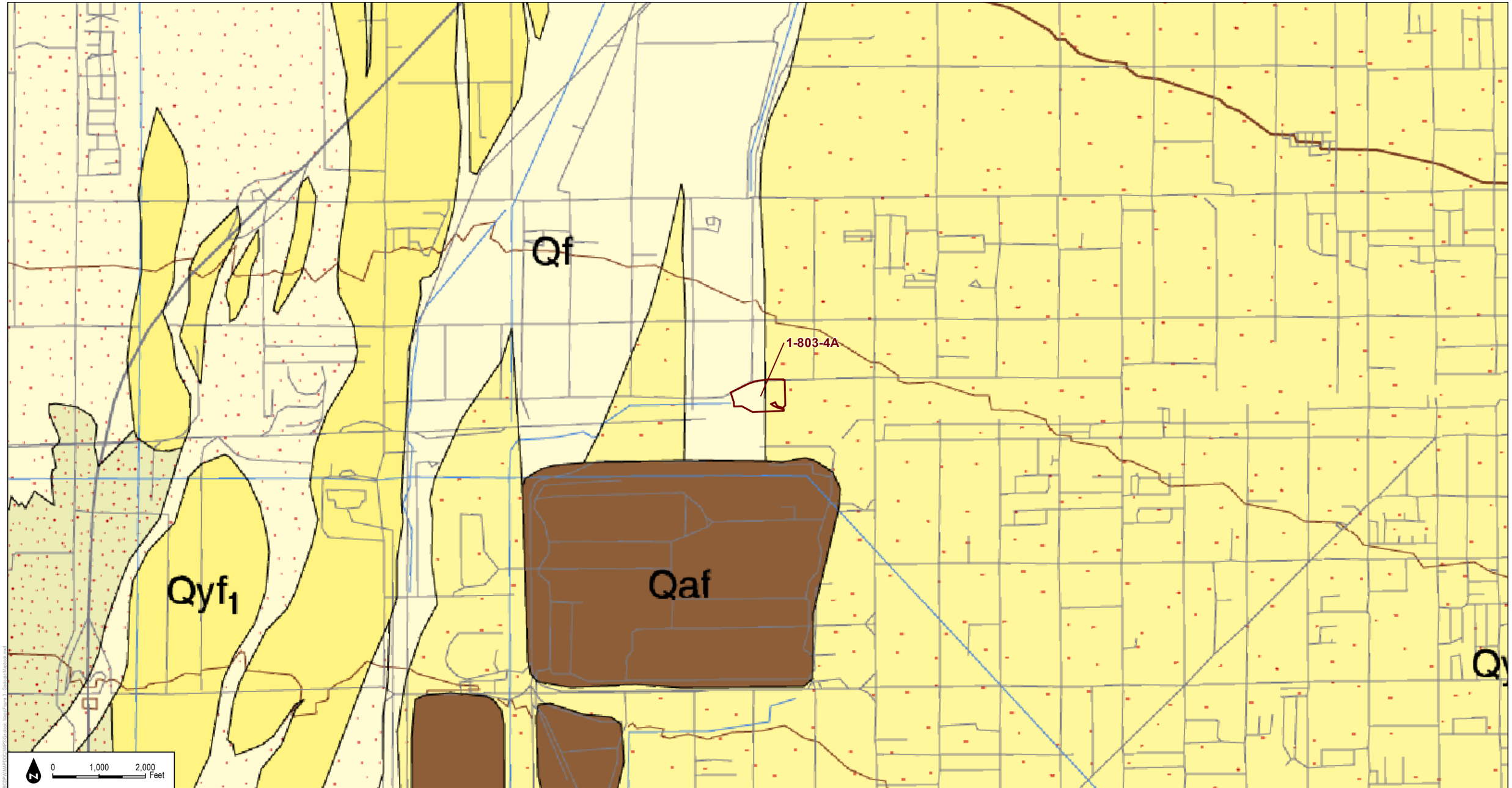
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

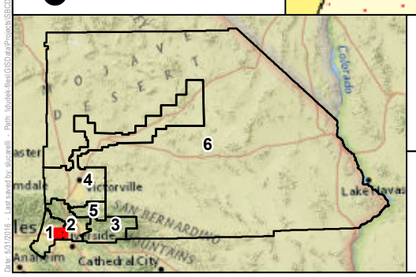
MAP 8

Zone 1 - Alta Loma Basin #3

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

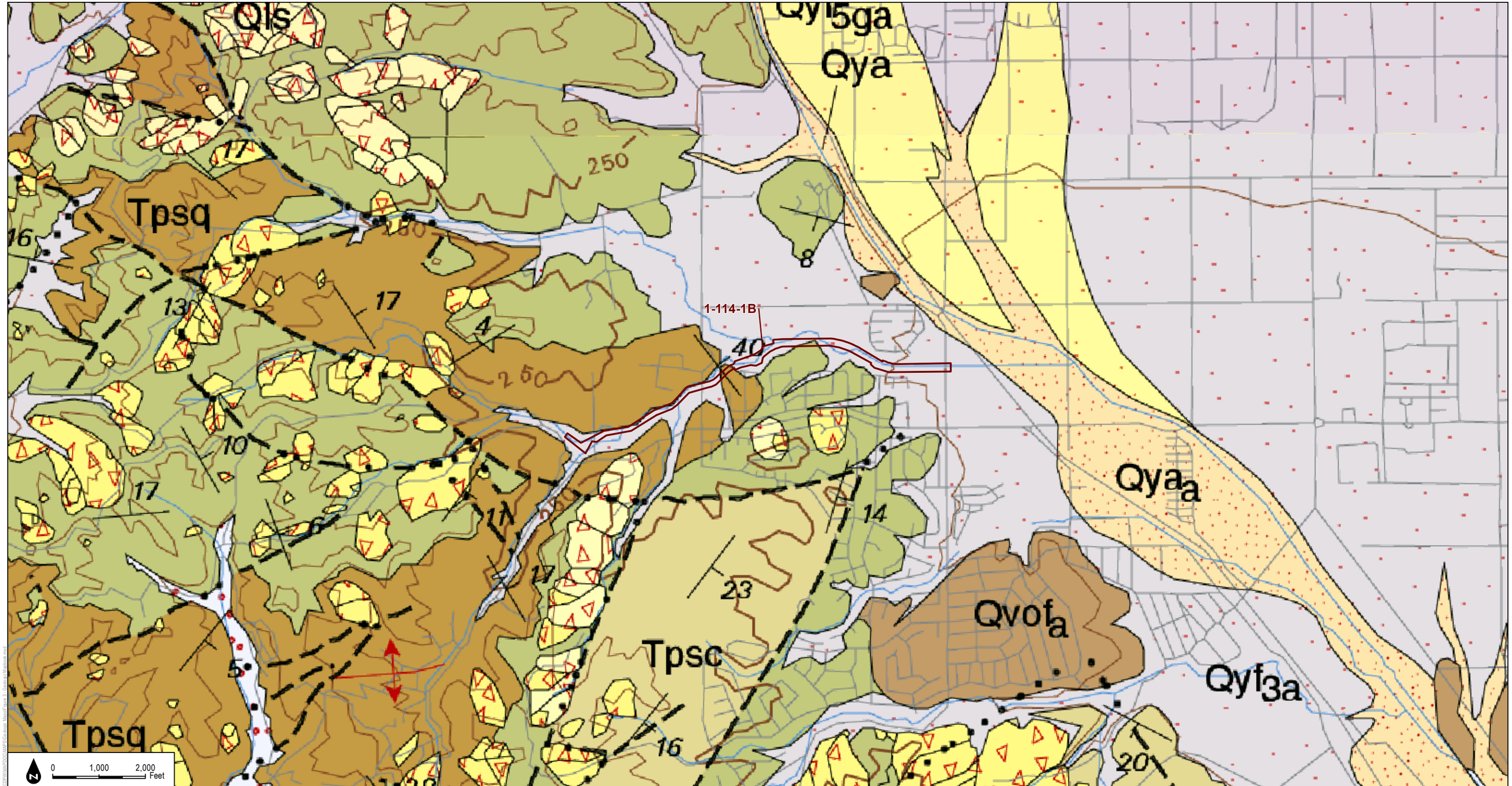
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

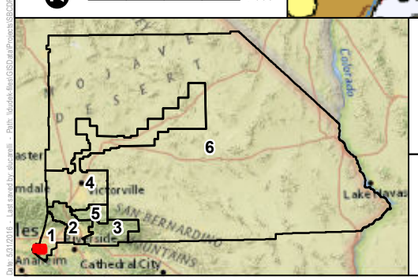
MAP 9

Zone 1 - Banana Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

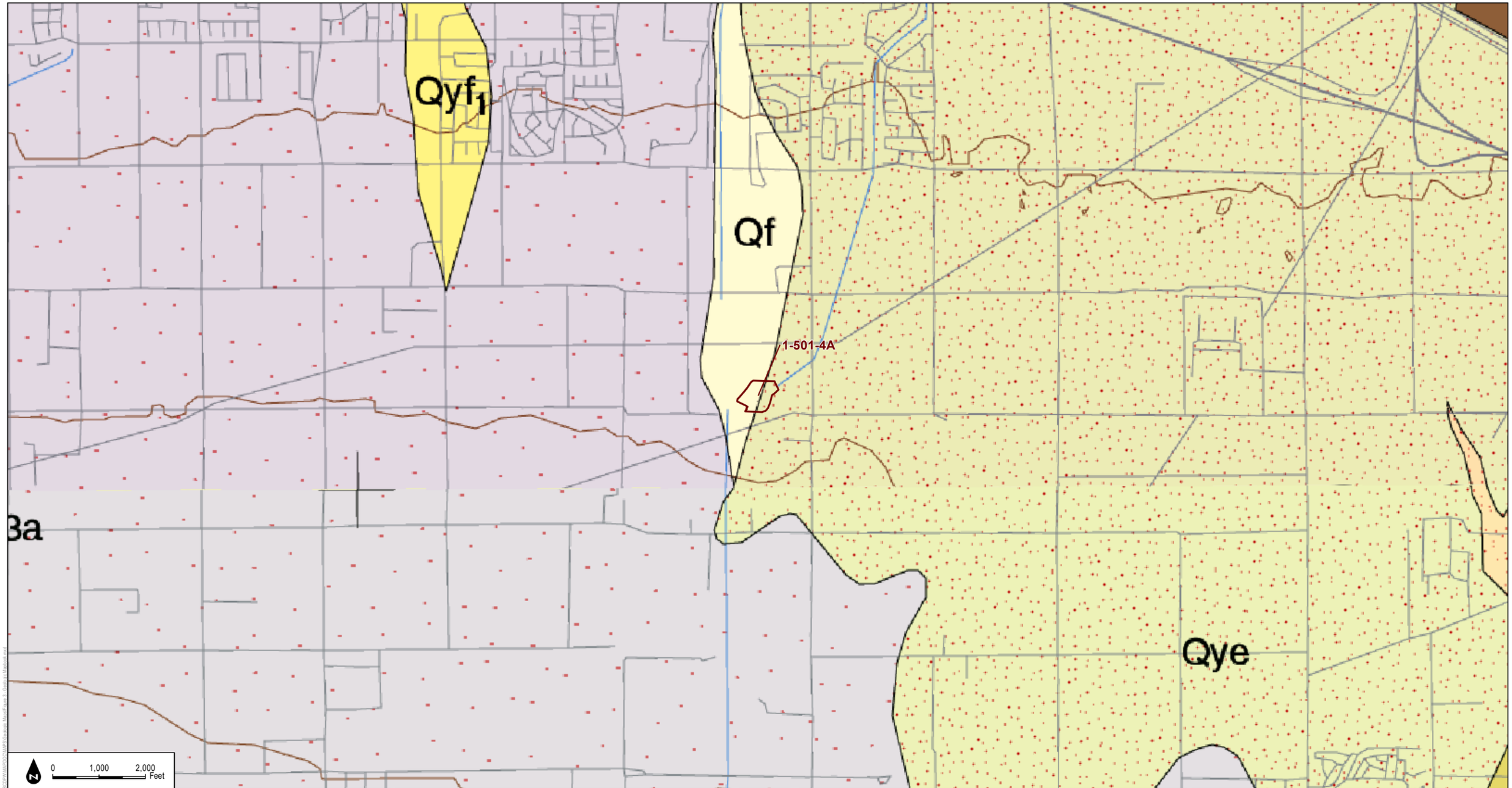
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

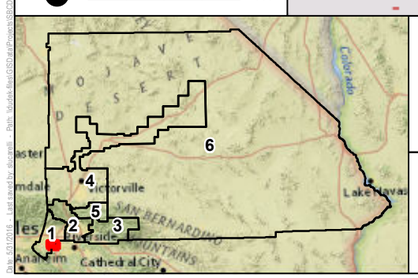
MAP 10

Zone 1 - Carbon Canyon Creek Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

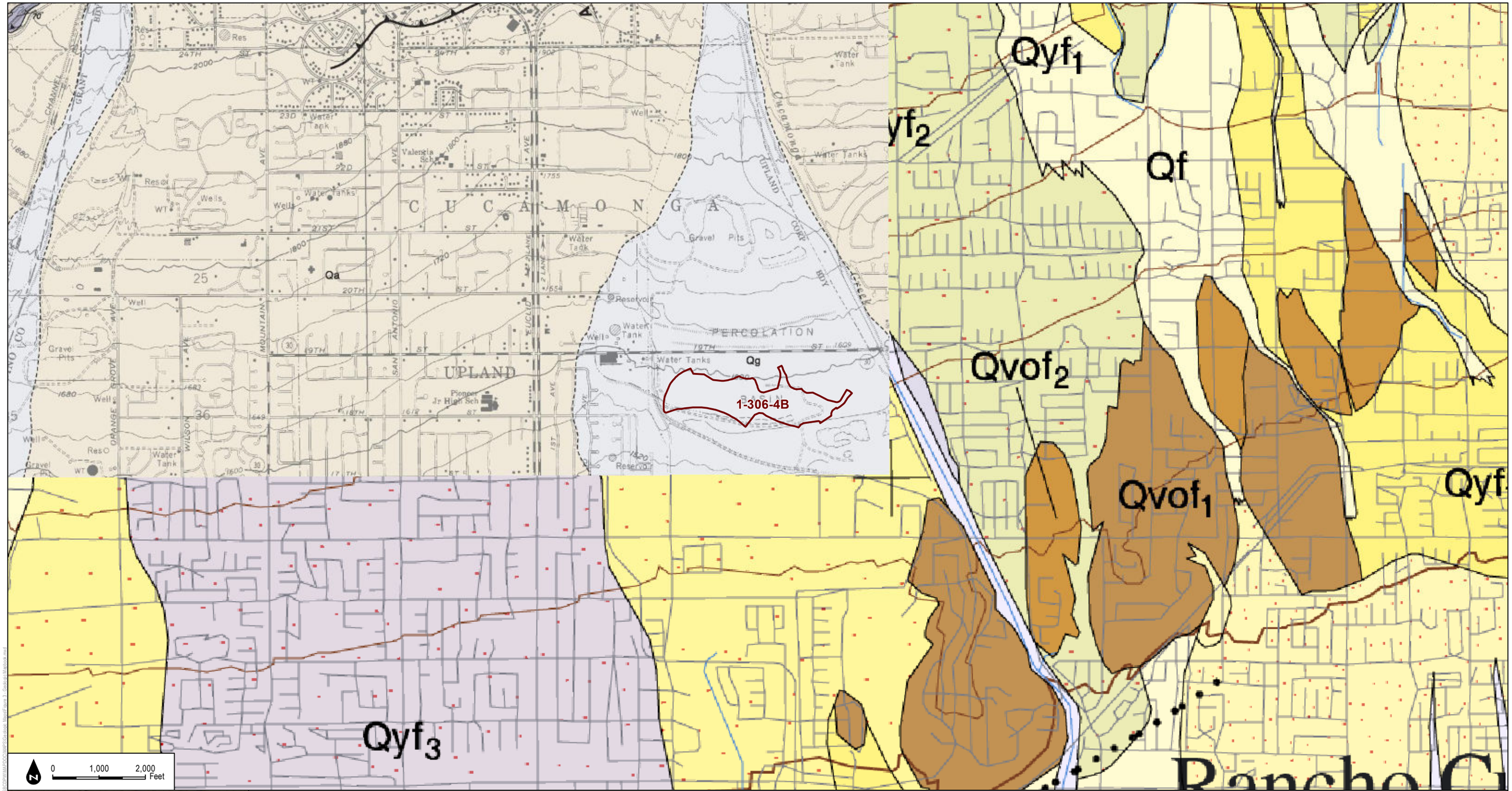
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

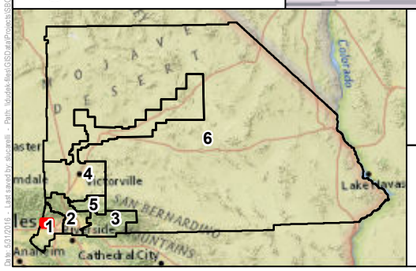
MAP 11

Zone 1 - Chris Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

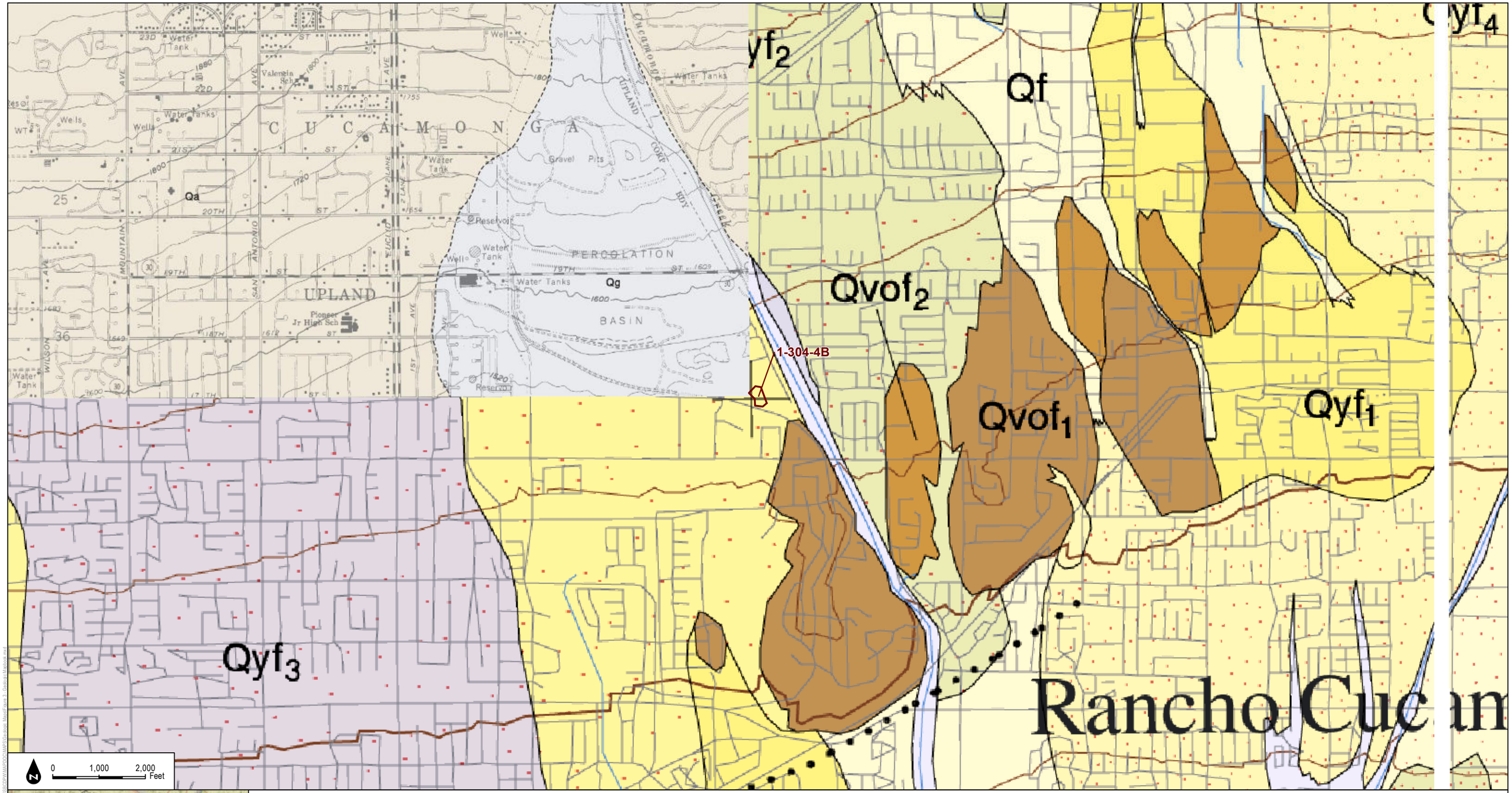
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

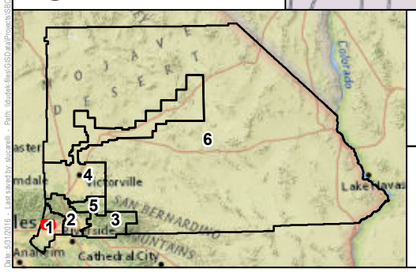
MAP 12

Zone 1 - Cucamonga Basin #6

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

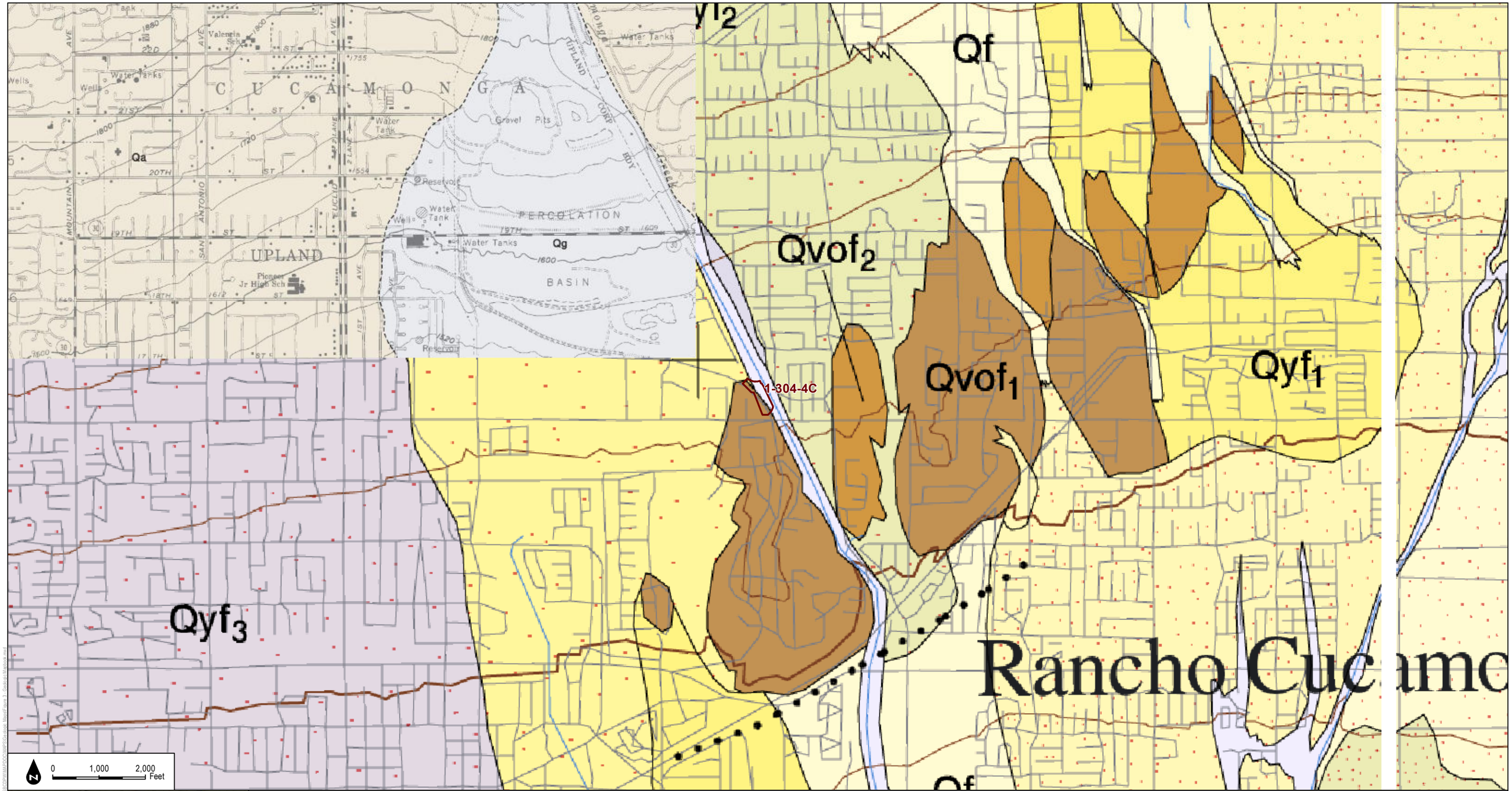
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

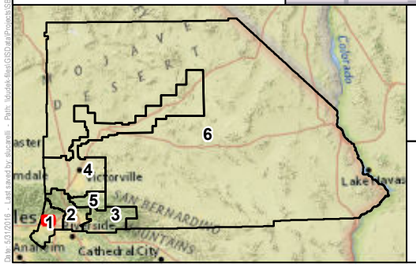
MAP 13

Zone 1 - Cucamonga Basin #7

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

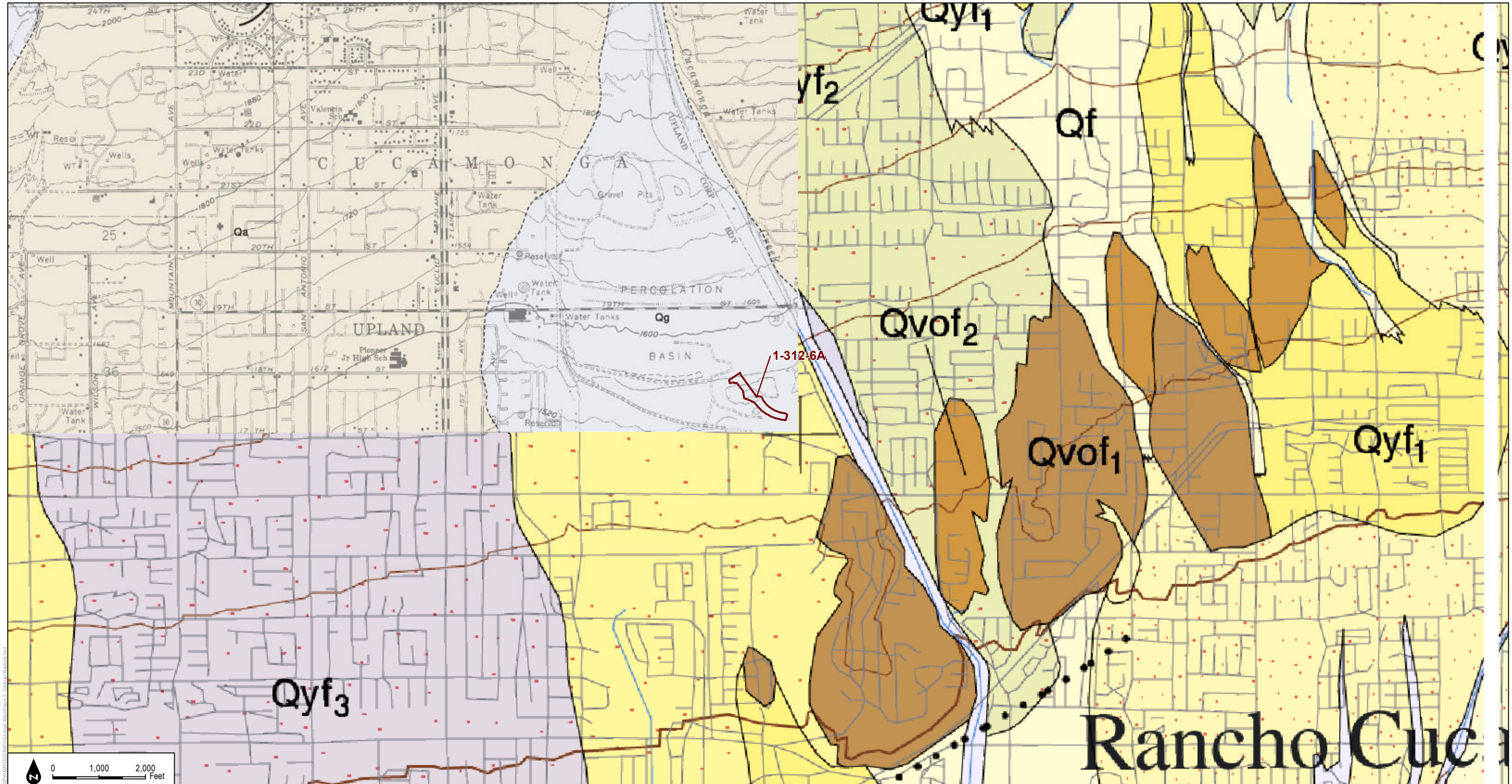
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

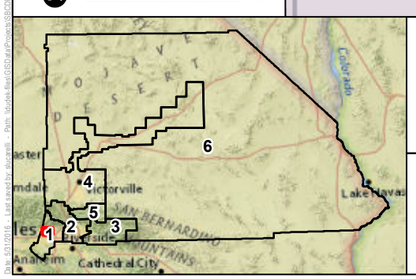
MAP 14

Zone 1 - Cucamonga Basin #8

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

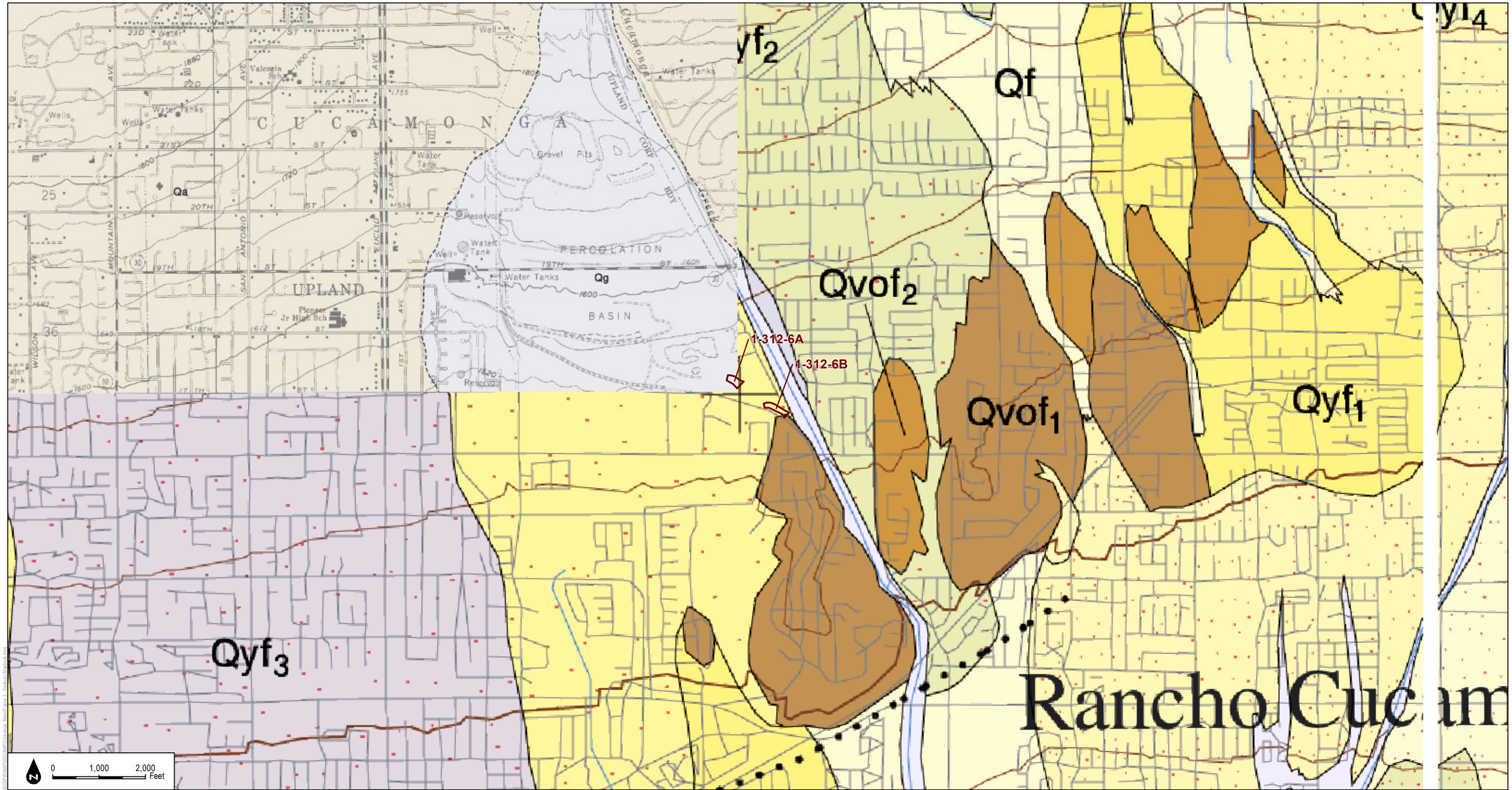
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

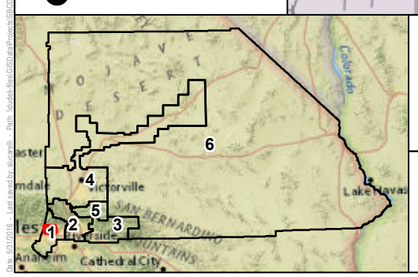
MAP 15

Zone 1 - Cucamonga Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

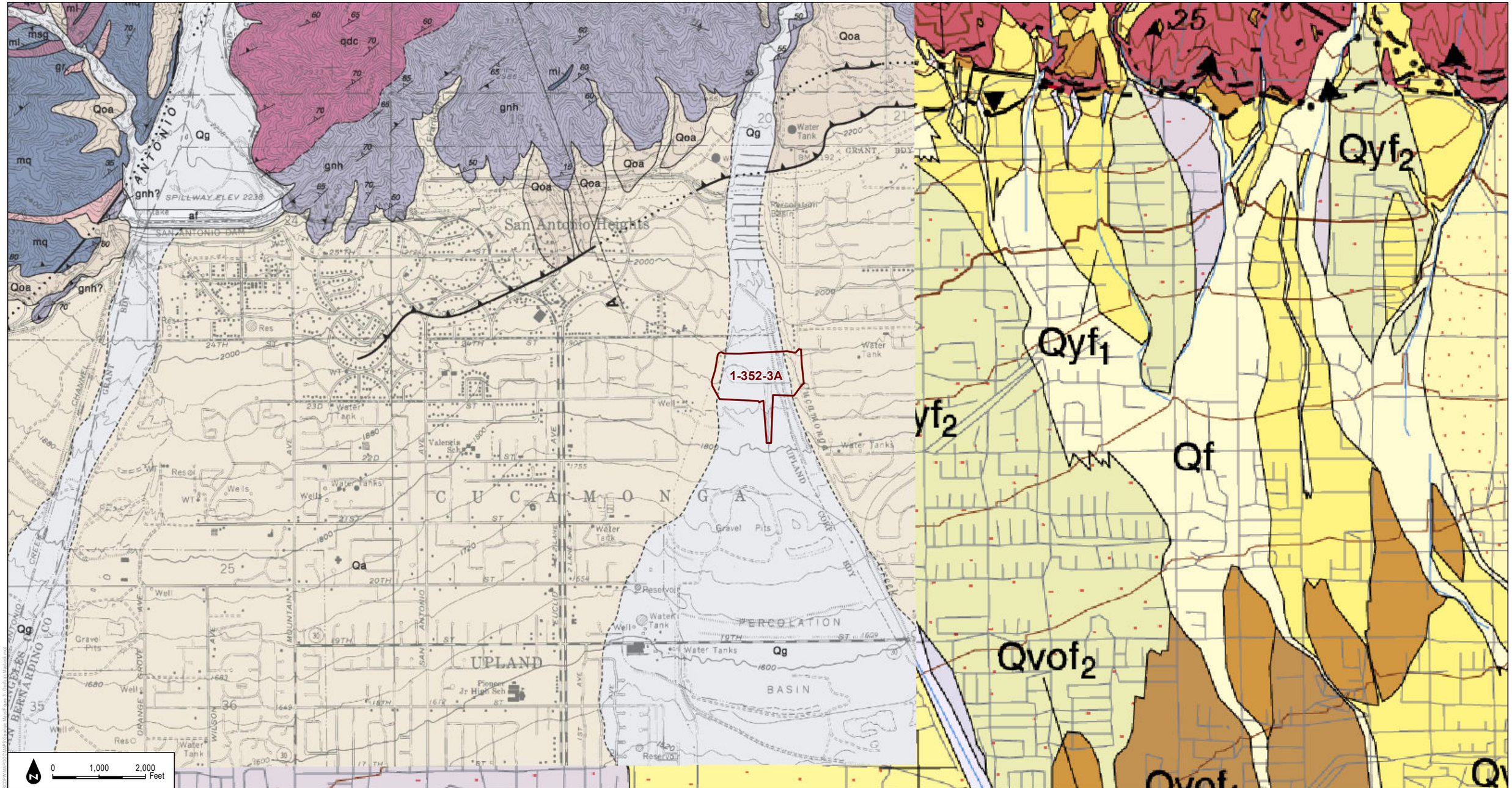
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

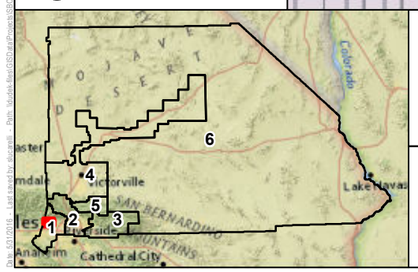
MAP 16

Zone 1 - Cucamonga Connector

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

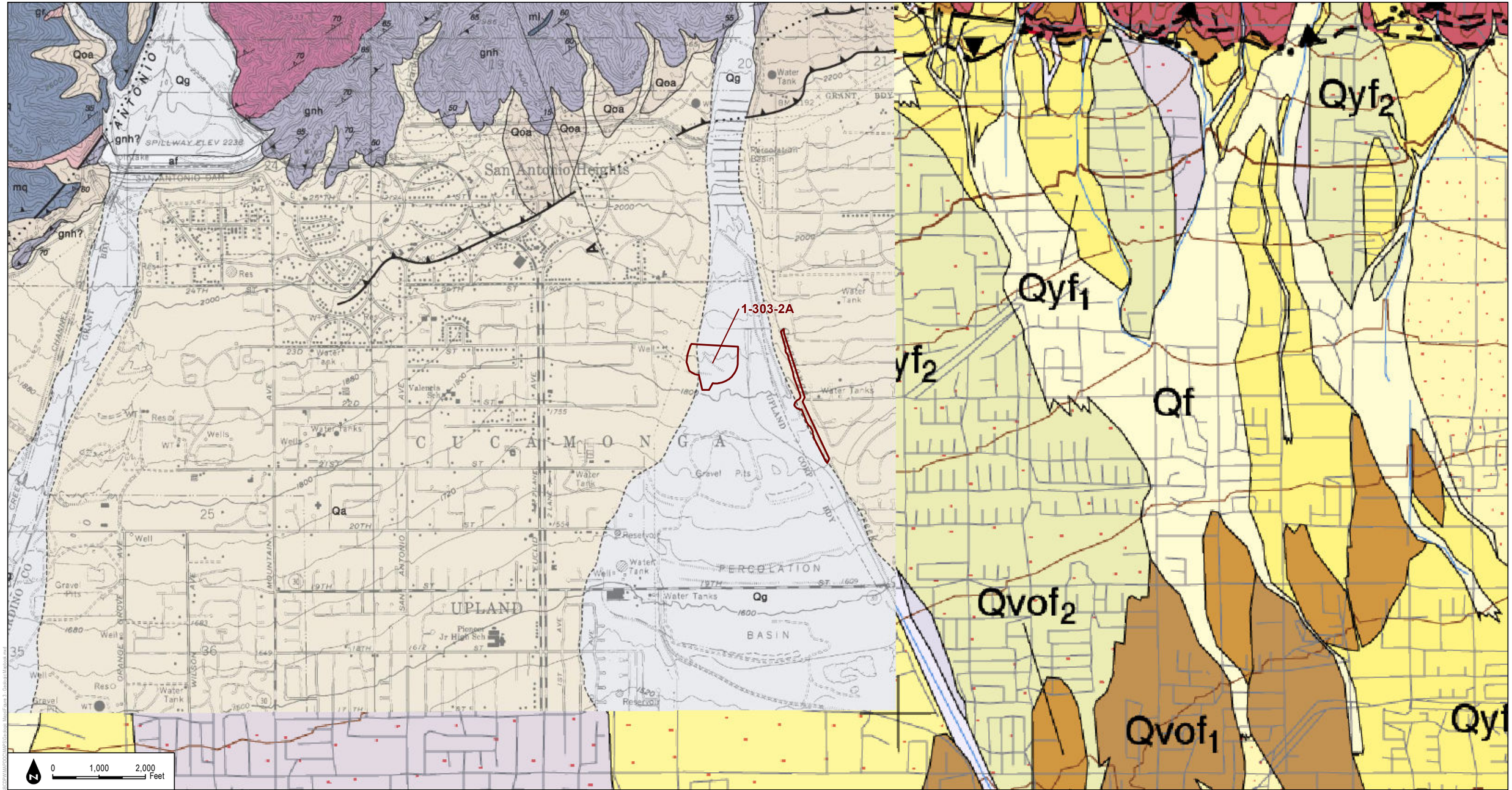
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

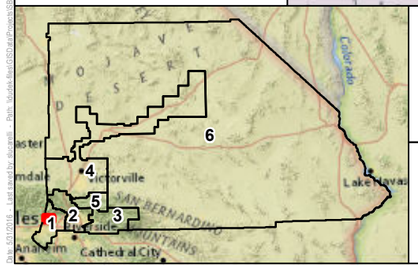
MAP 17

Zone 1 - Cucamonga Dam, COE (DSOD)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

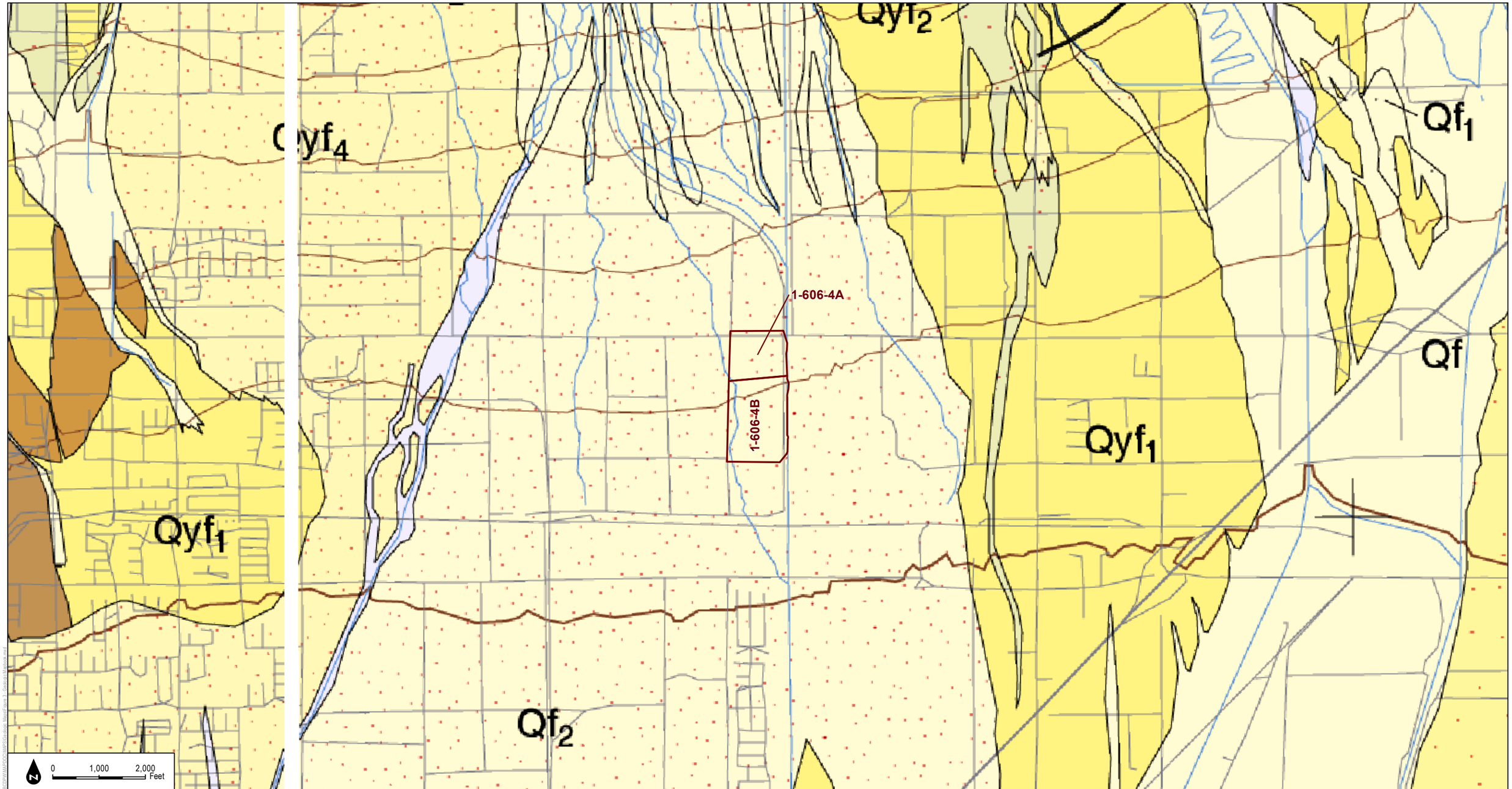
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

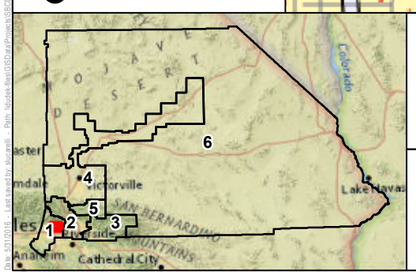
MAP 18

Zone 1 - Cucamonga Sprdg Grnds

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

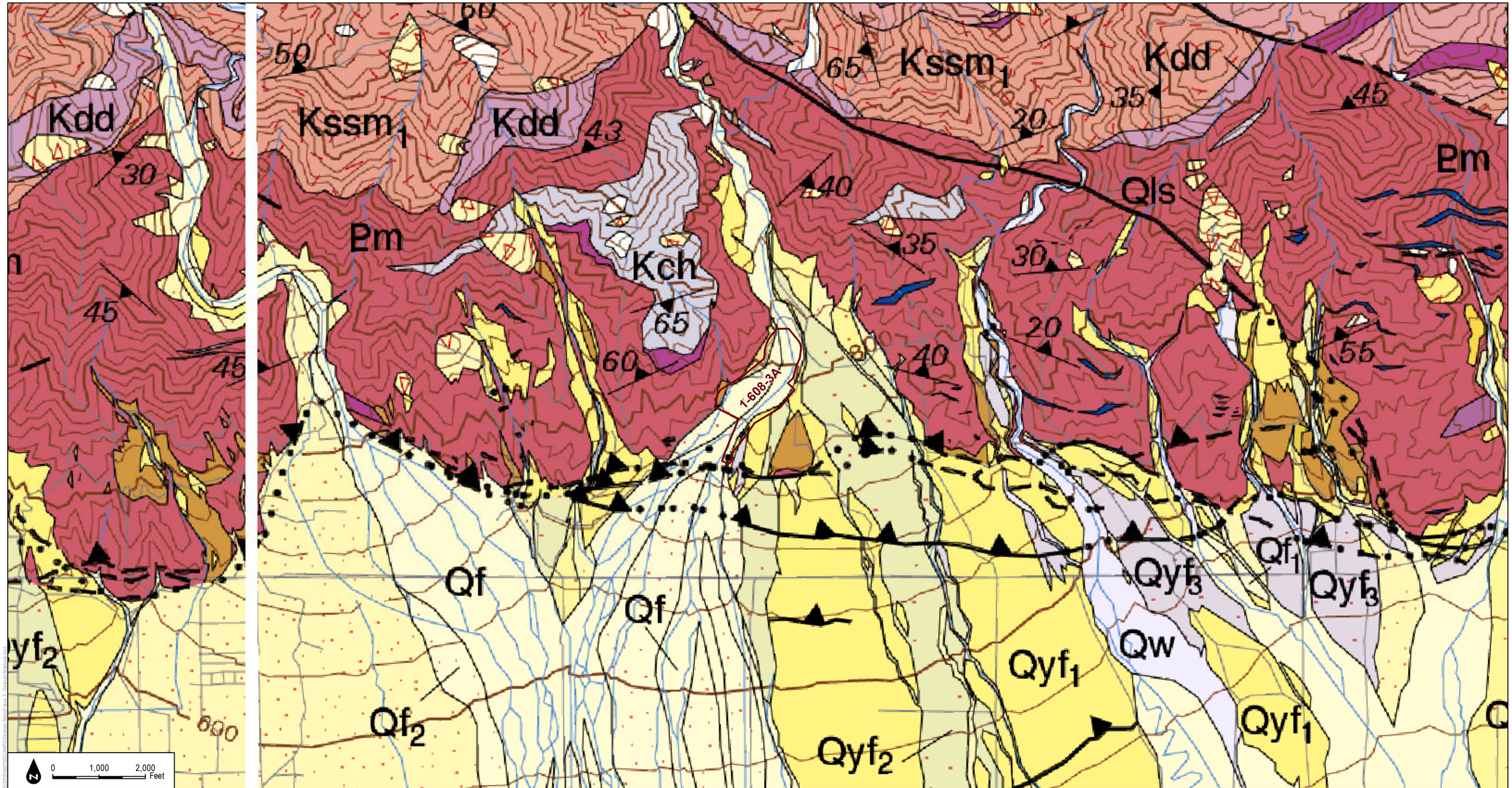
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

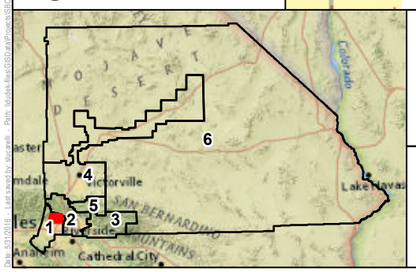
MAP 19

Zone 1 - Day Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

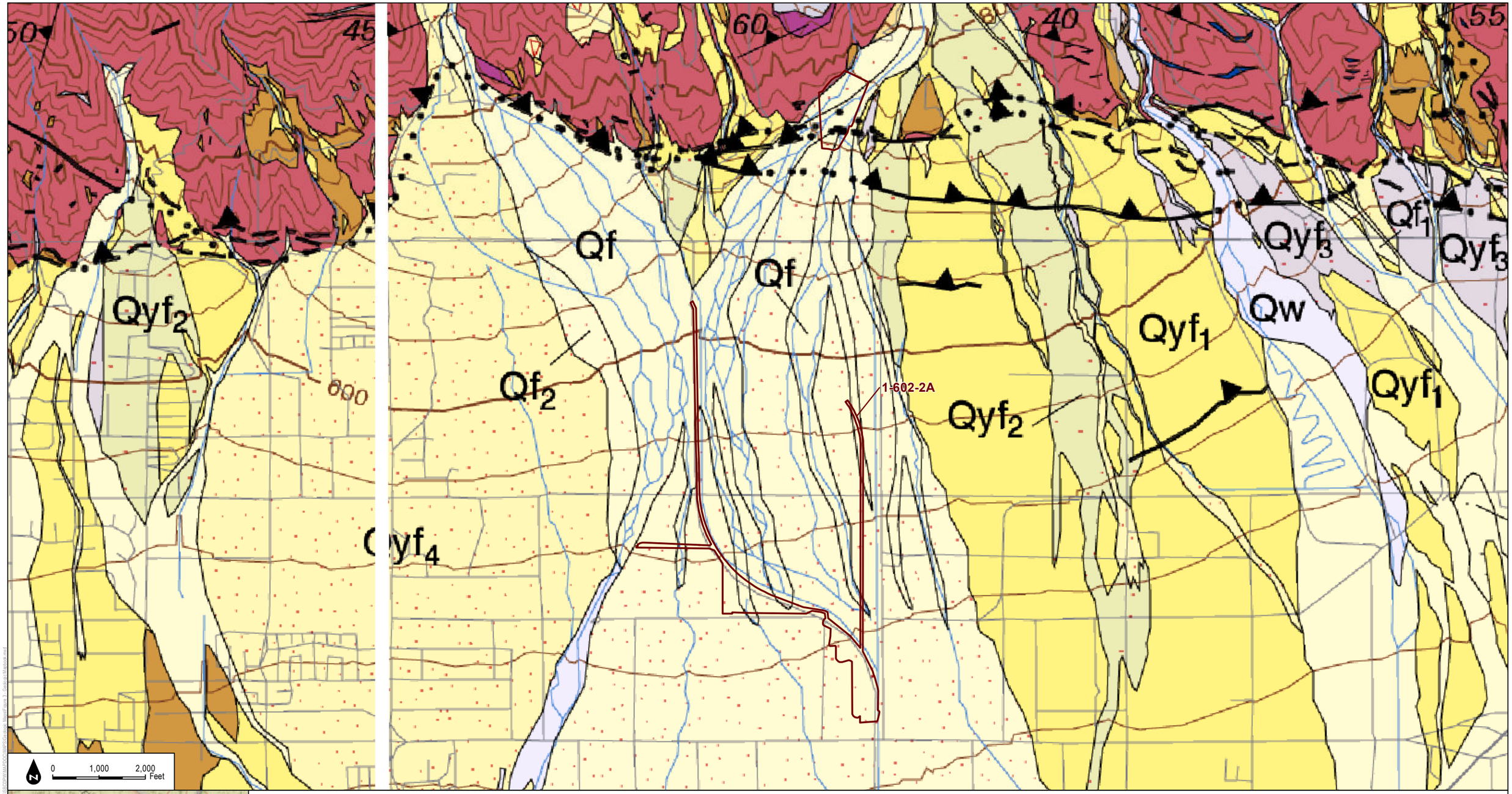
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

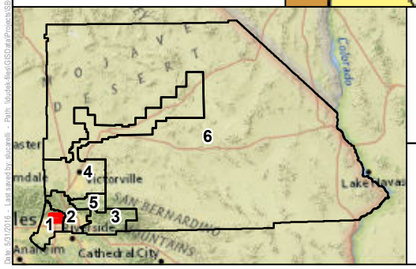
MAP 20

Zone 1 - Day Creek Dam (DSOD)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

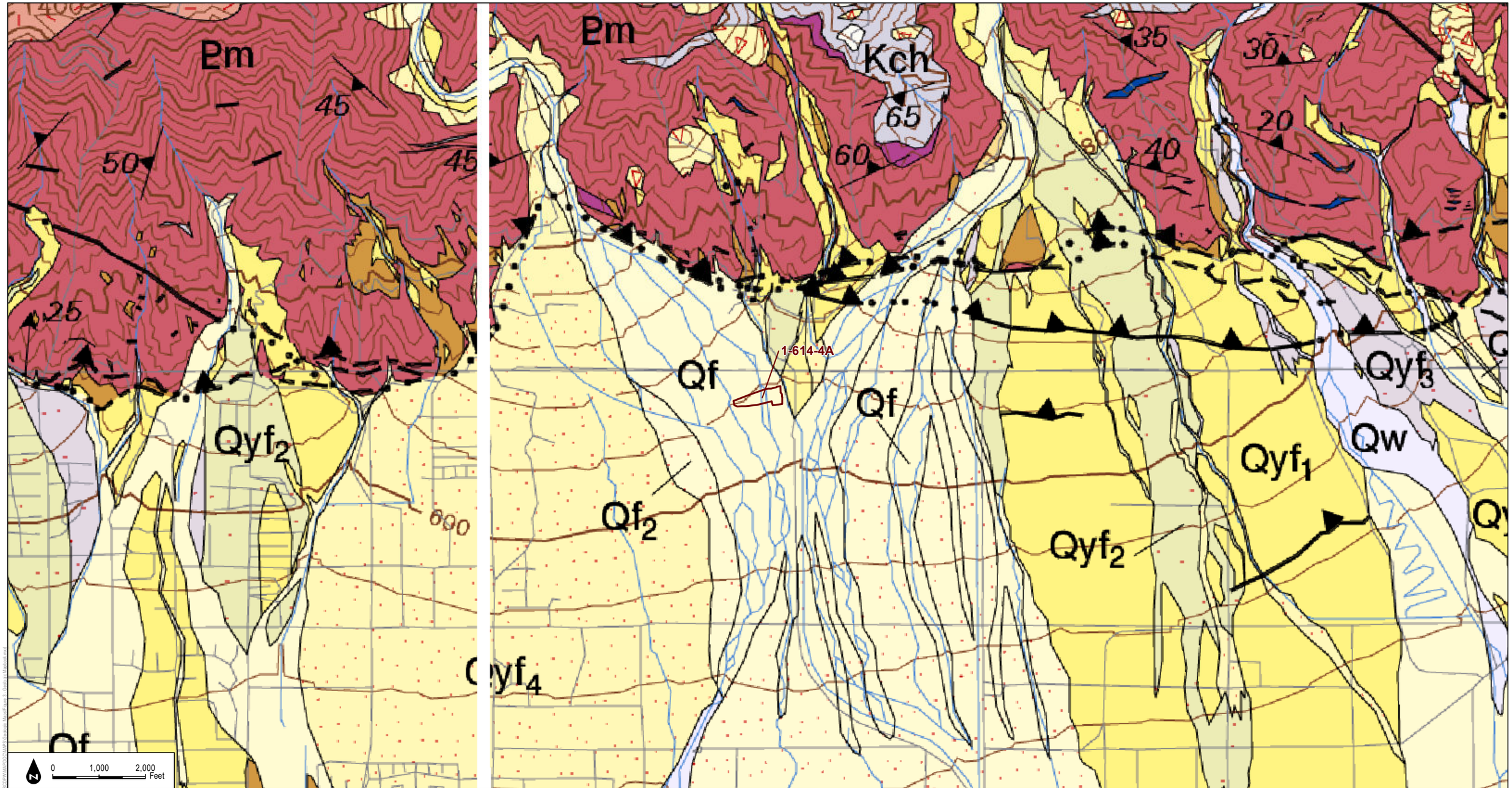
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

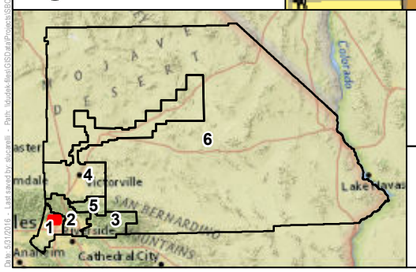
MAP 21

Zone 1 - Day Creek Sprdg Grnds

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

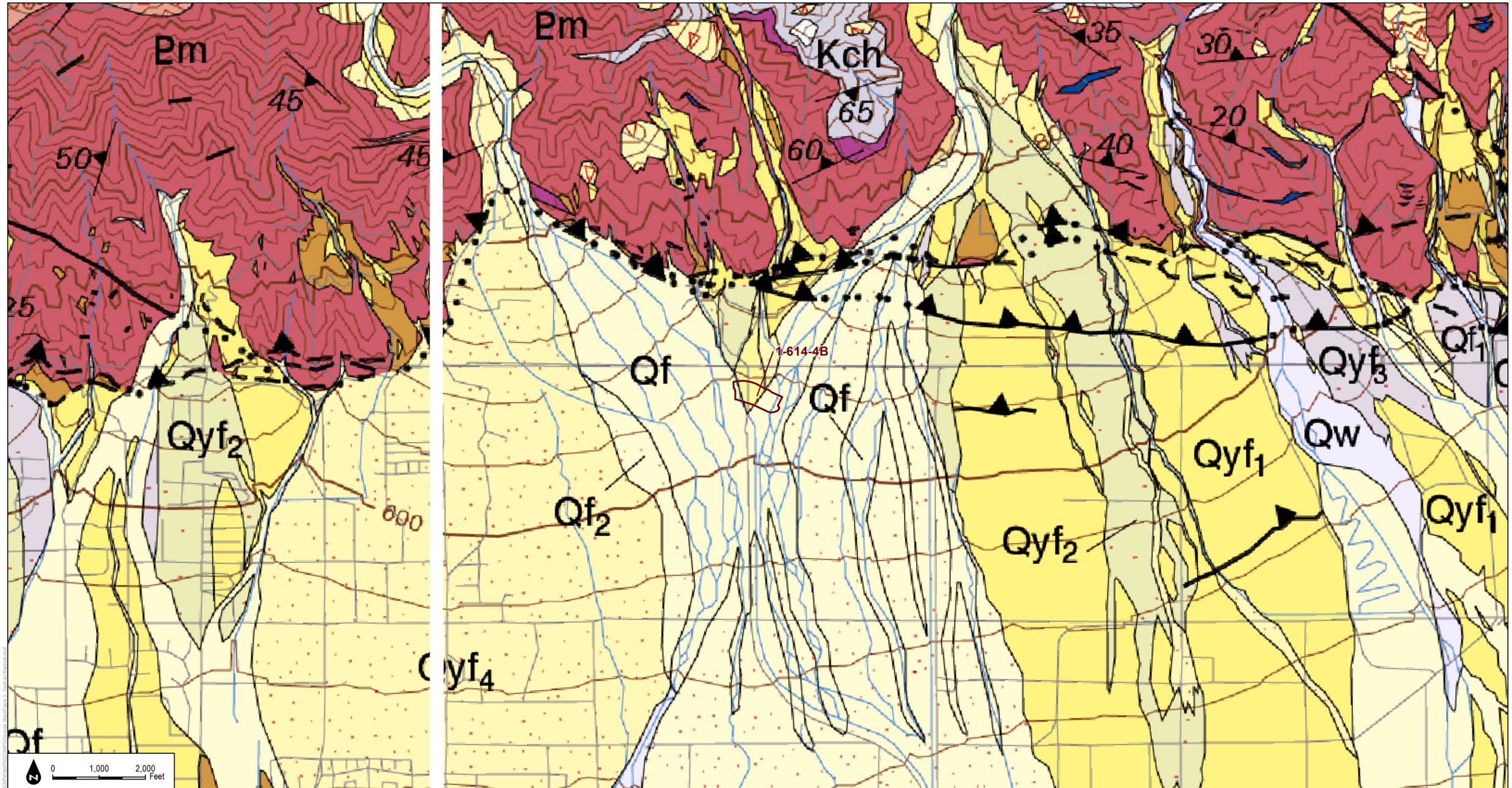
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

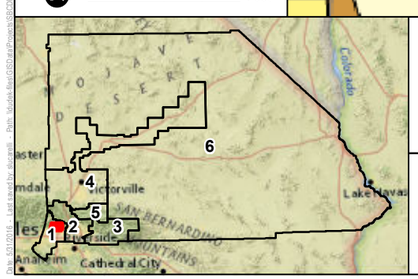
MAP 22

Zone 1 - Day Creek Sprdg. Basin #1

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

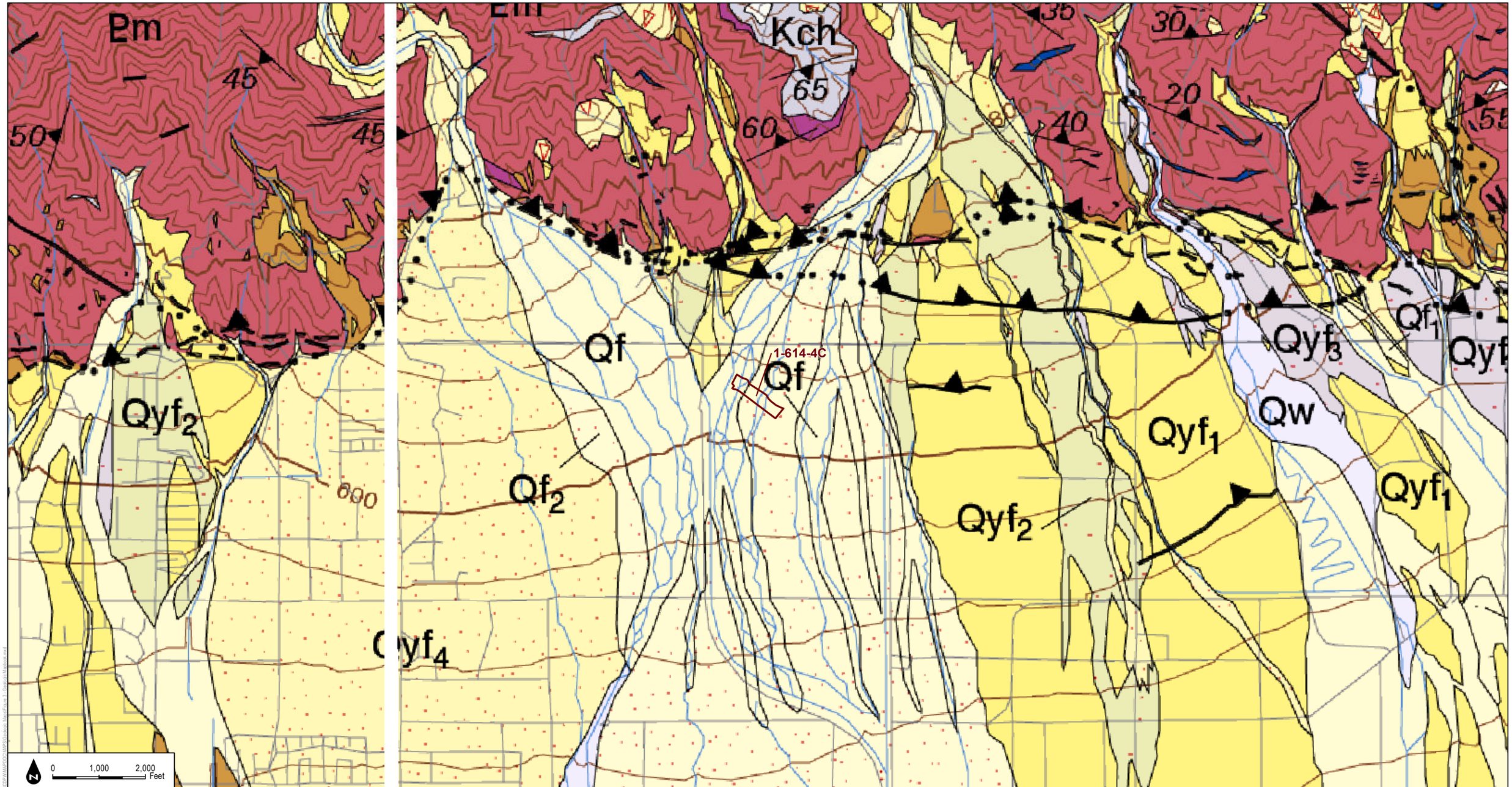
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

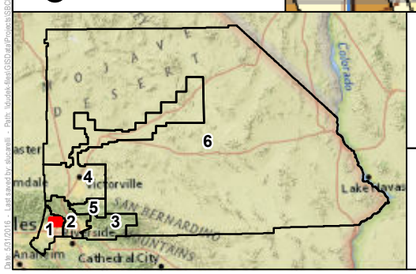
MAP 23

Zone 1 - Day Creek Sprdg. Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

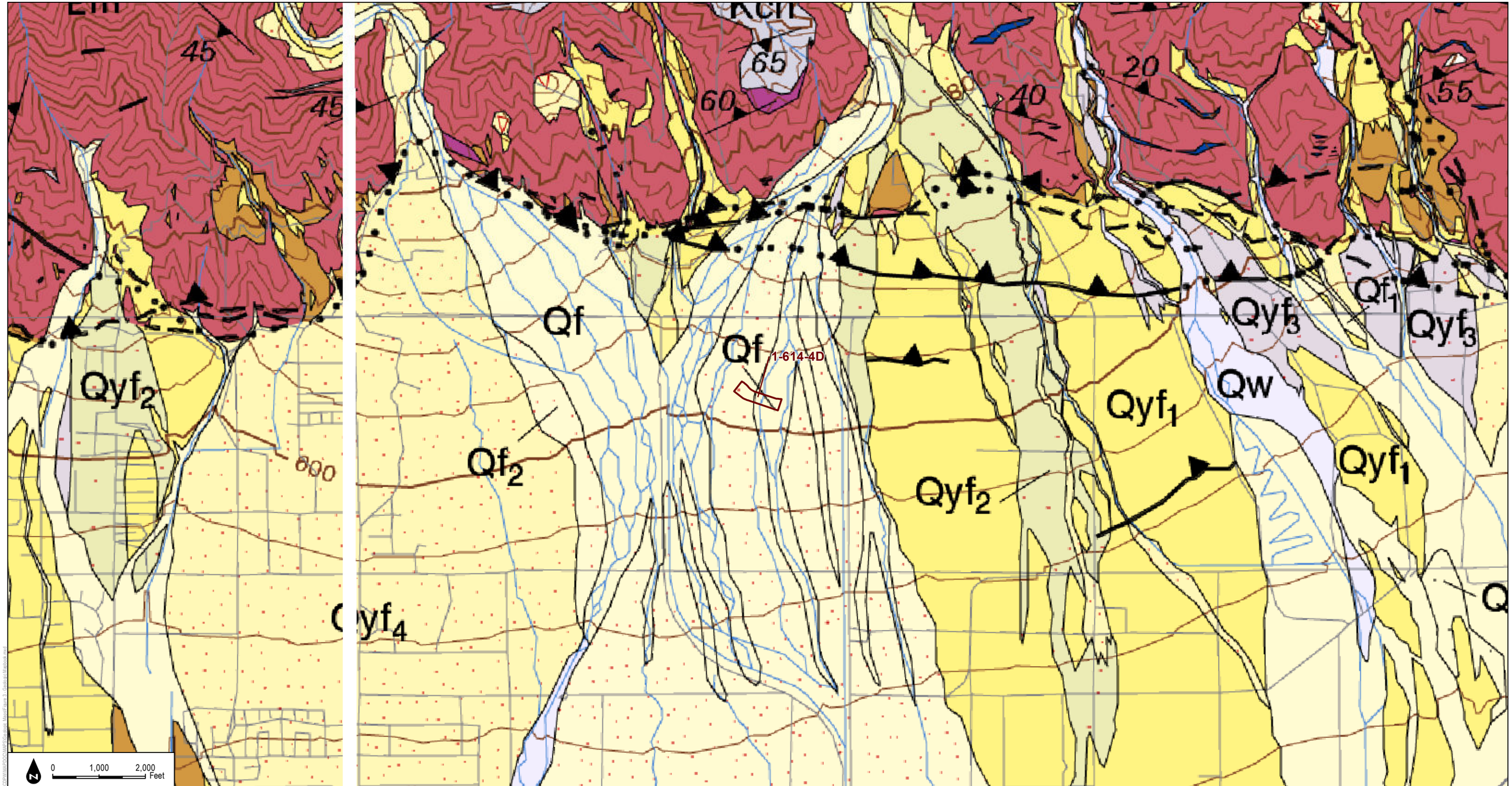
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

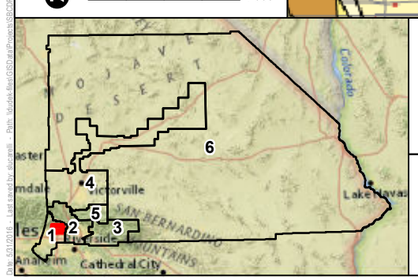
MAP 24

Zone 1 - Day Creek Sprdg. Basin #3

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

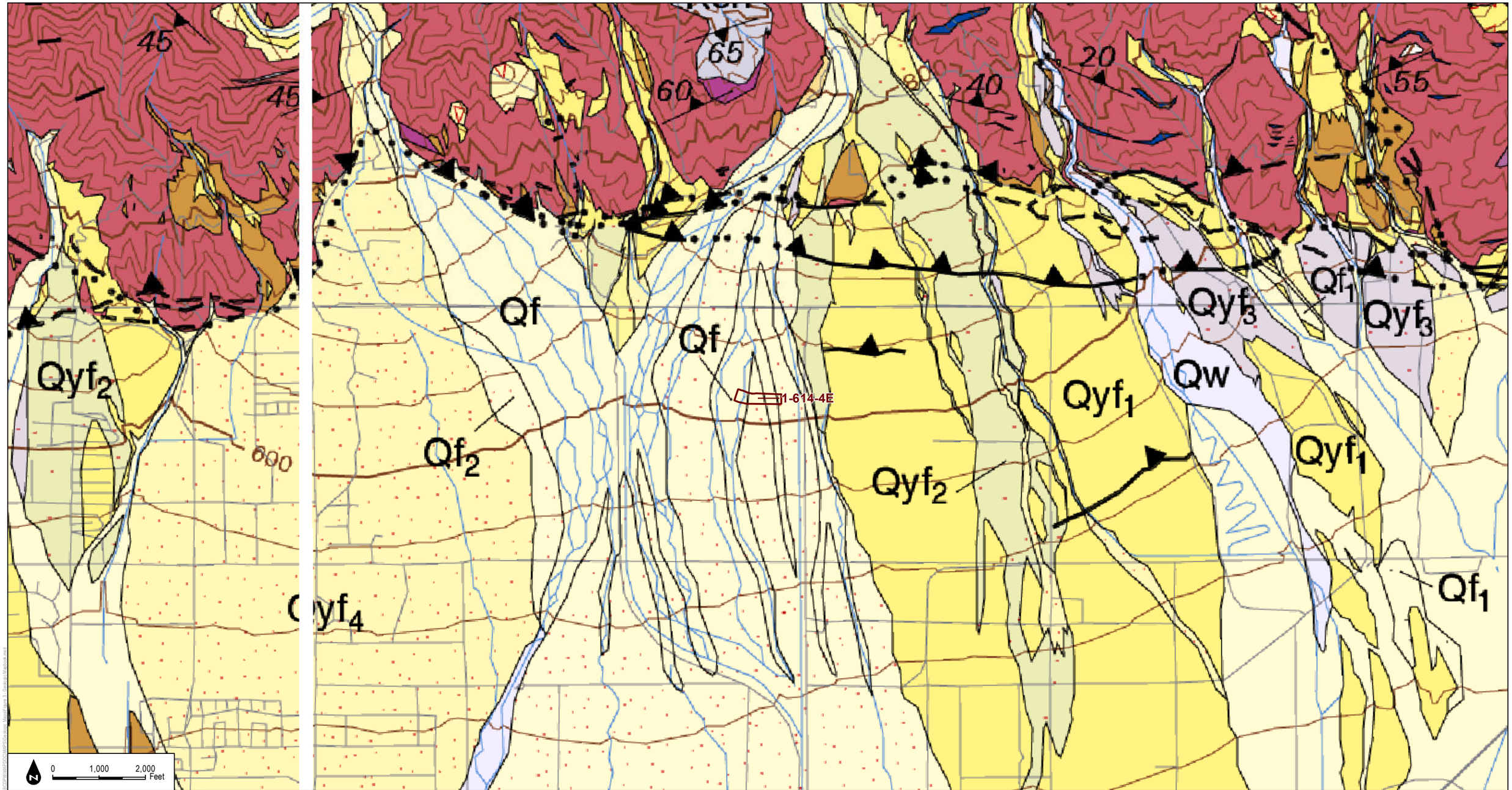
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

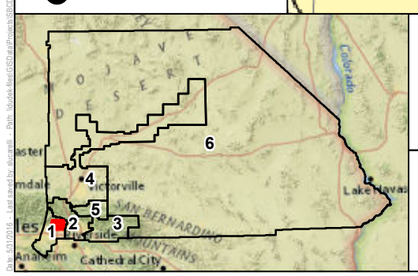
MAP 25

Zone 1 - Day Creek Sprdg. Basin #4

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

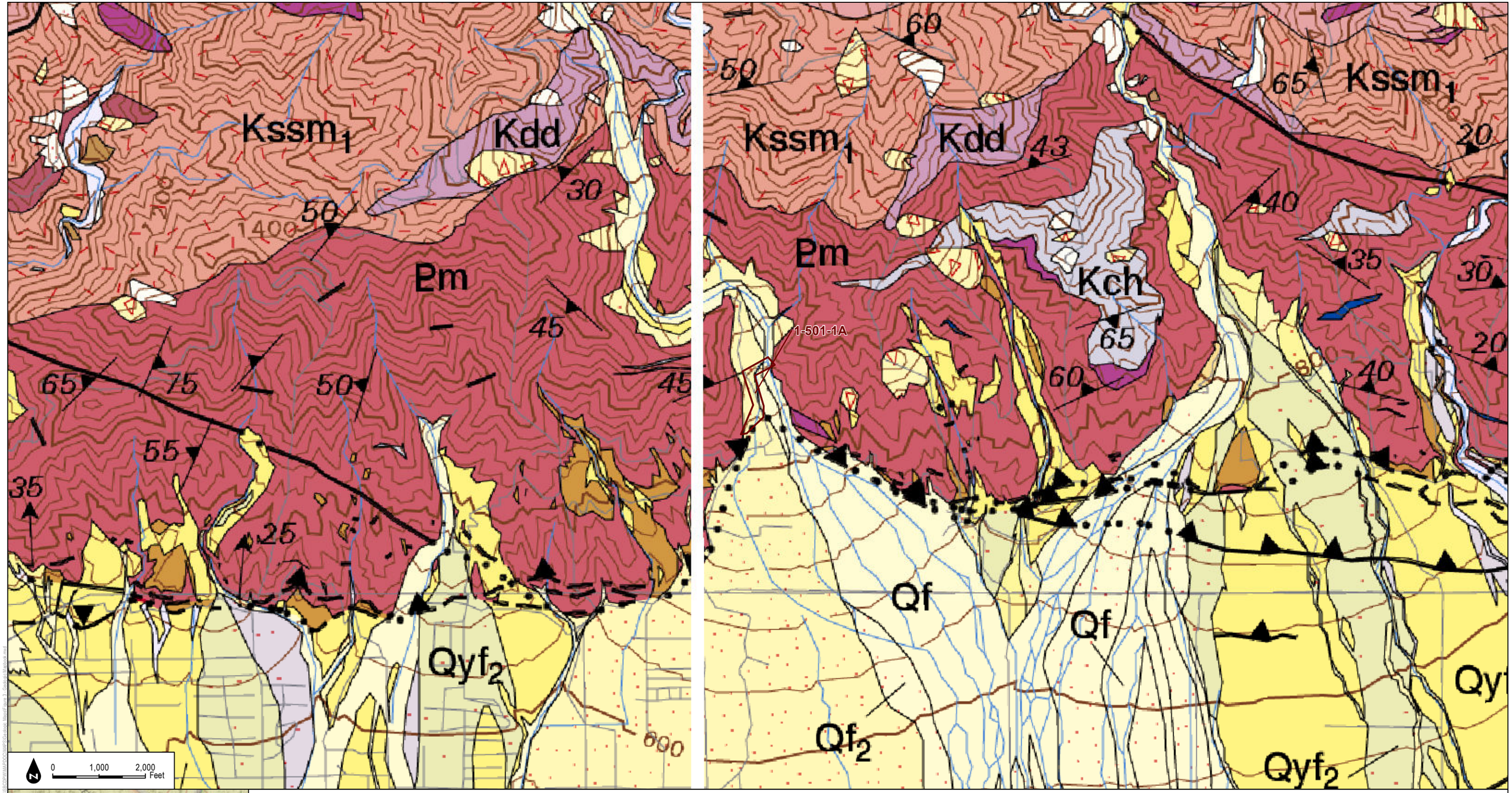
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

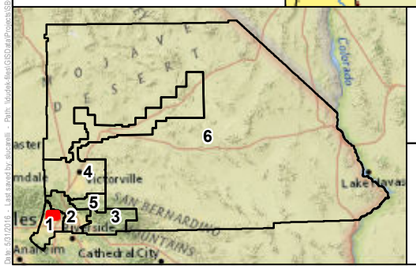
MAP 26

Zone 1 - Day Creek Sprdg. Basin #5

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

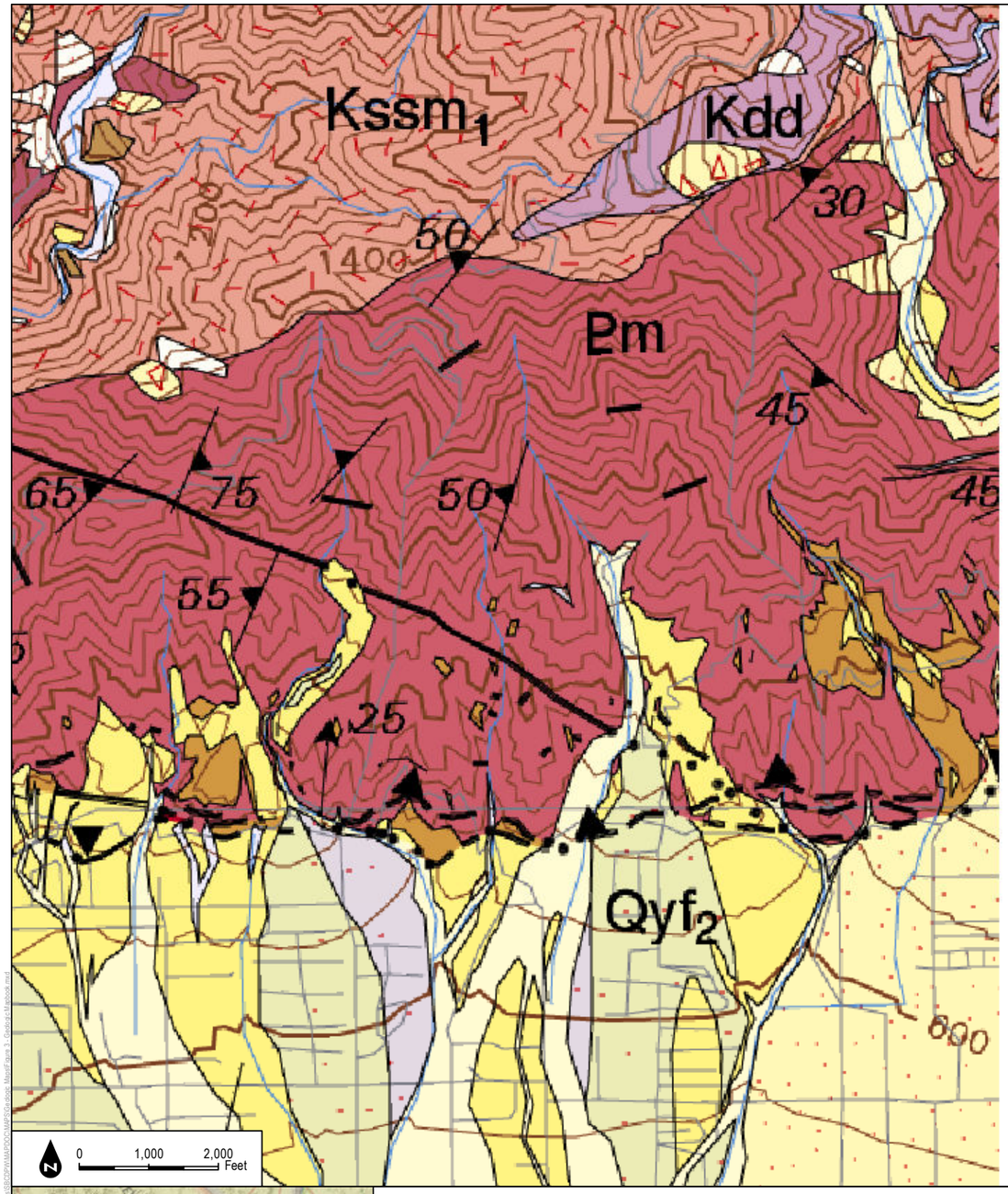
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

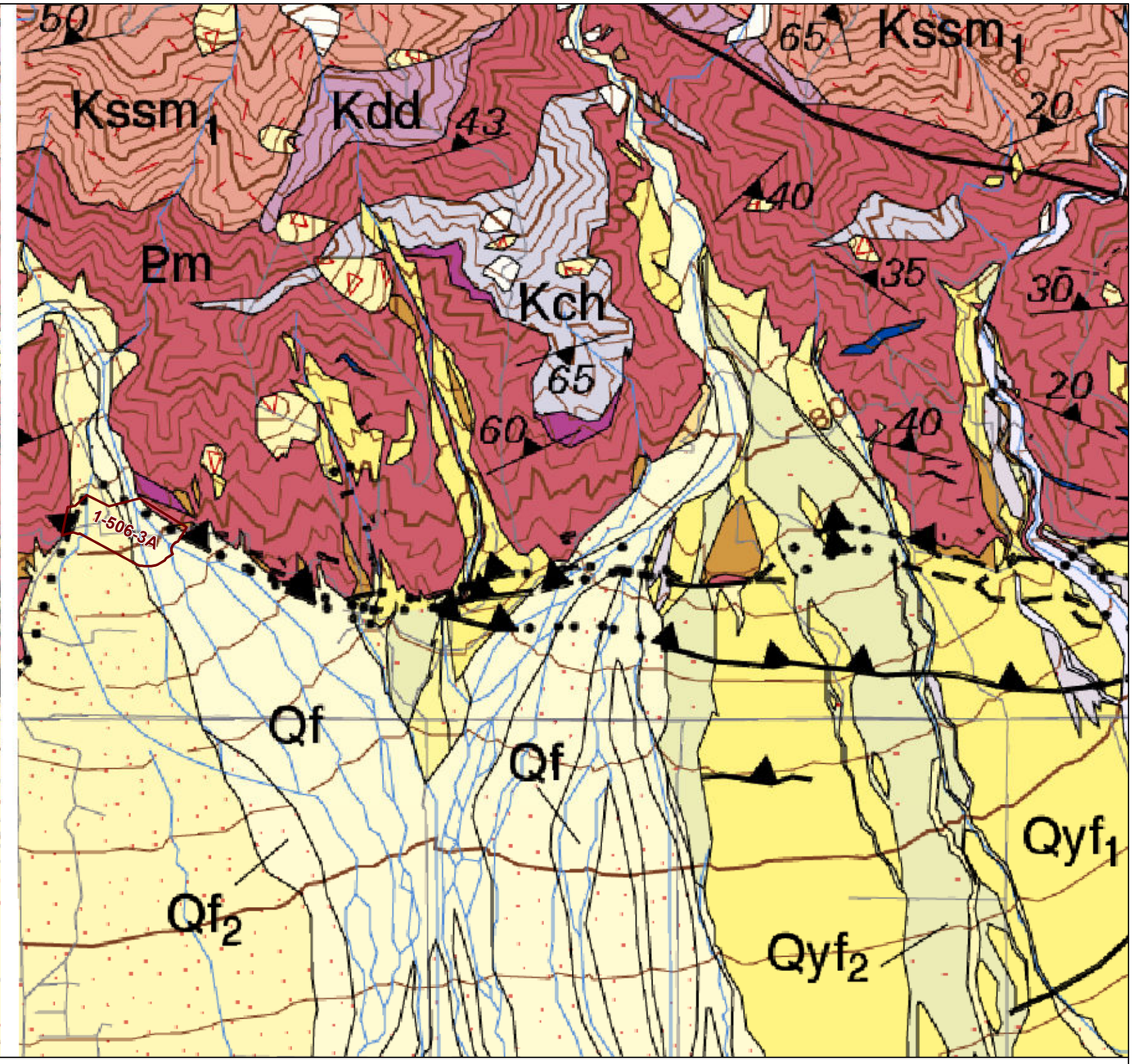
MAP 27

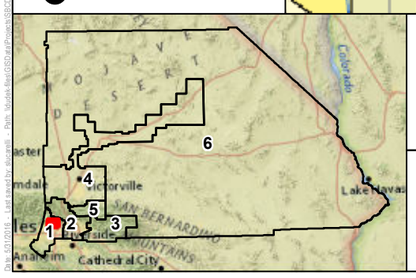
Zone 1 - Deer Creek Channel

San Bernardino Department of Public Works

Geologic Map







Redbook Polygons

1:24,000

DUDEK

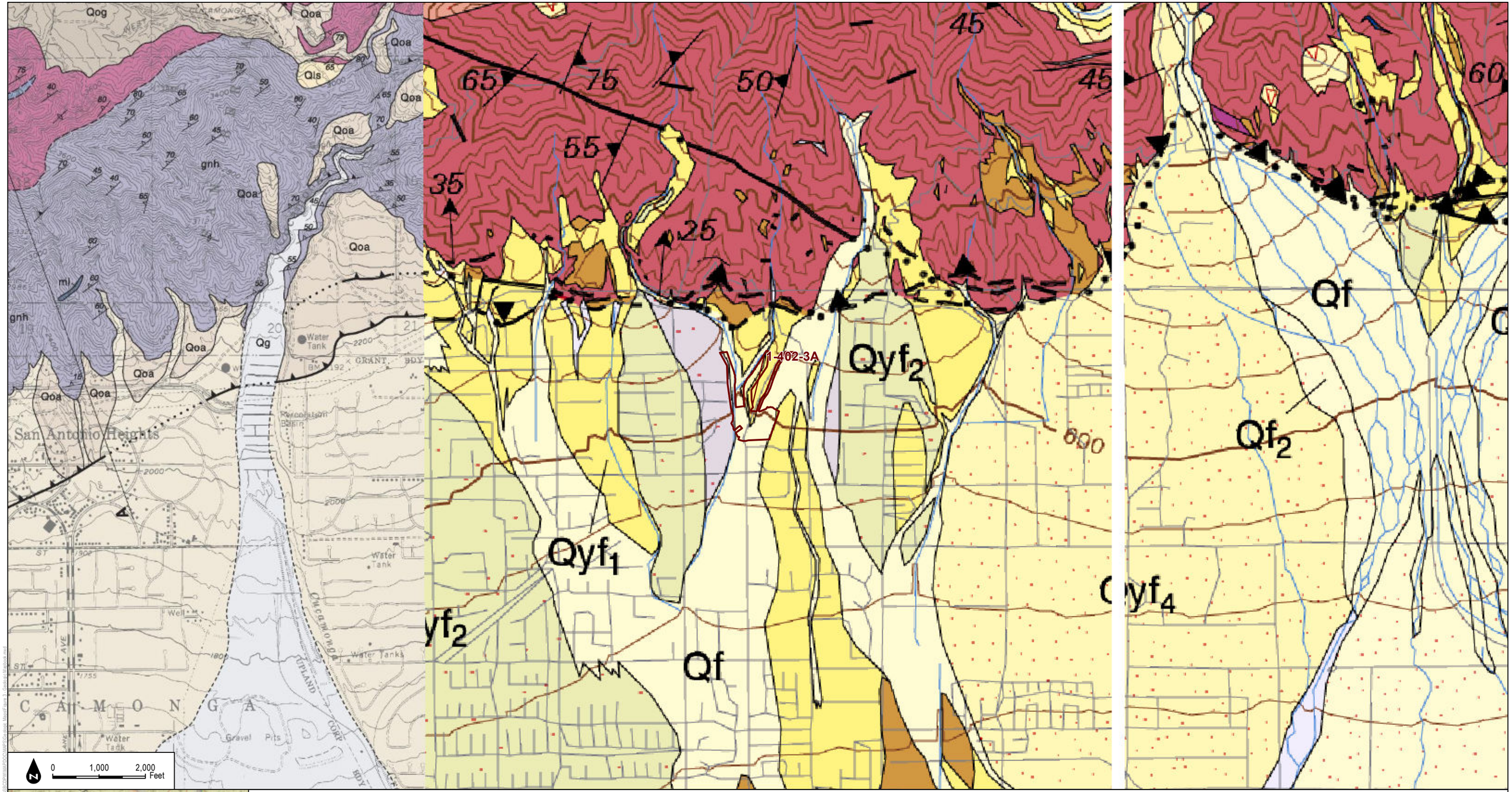
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

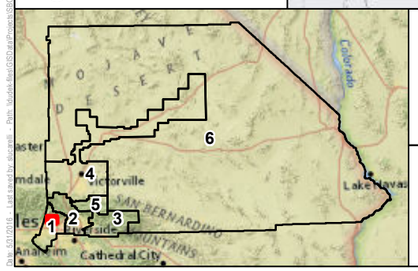
MAP 28

Zone 1 - Deer Creek Debris Basin, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

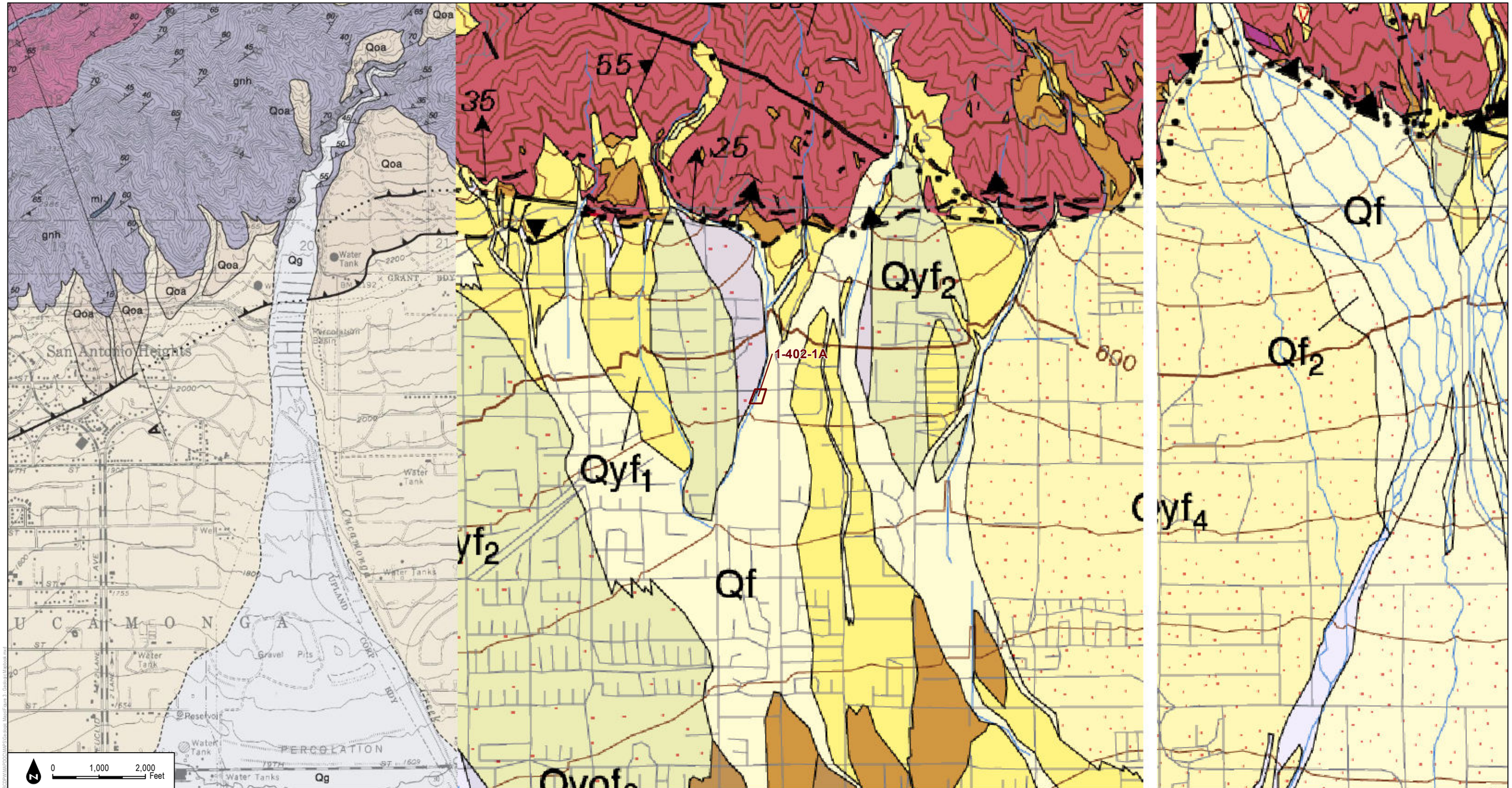
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

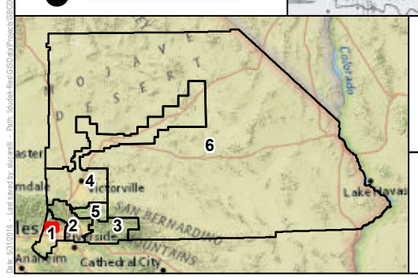
MAP 29

Zone 1 - Demens Basin #1, COE (DSOD)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

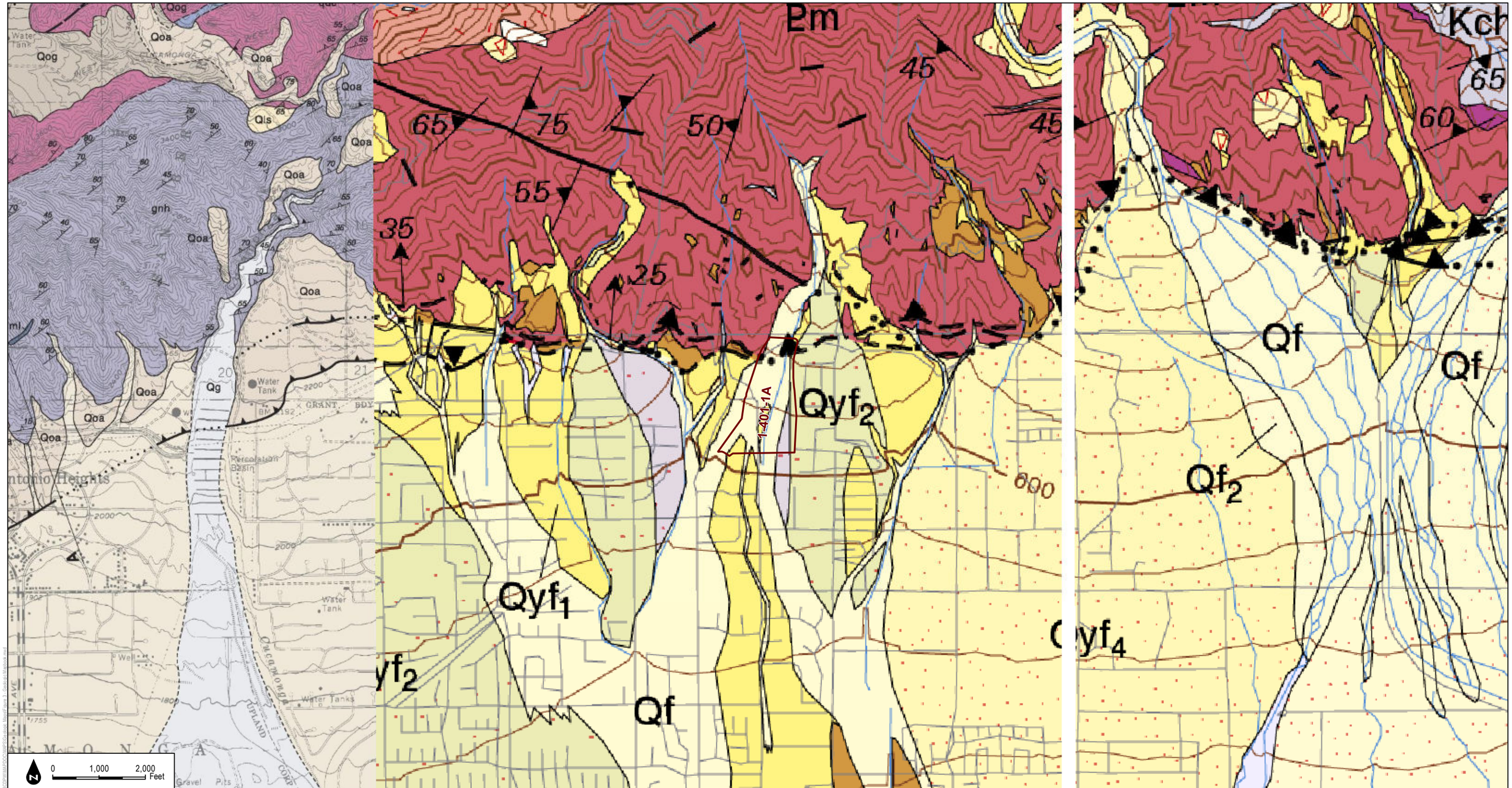
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

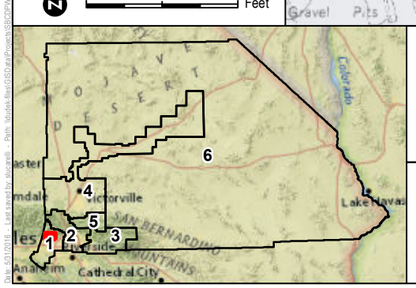
MAP 30

Zone 1 - Demens Basin Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

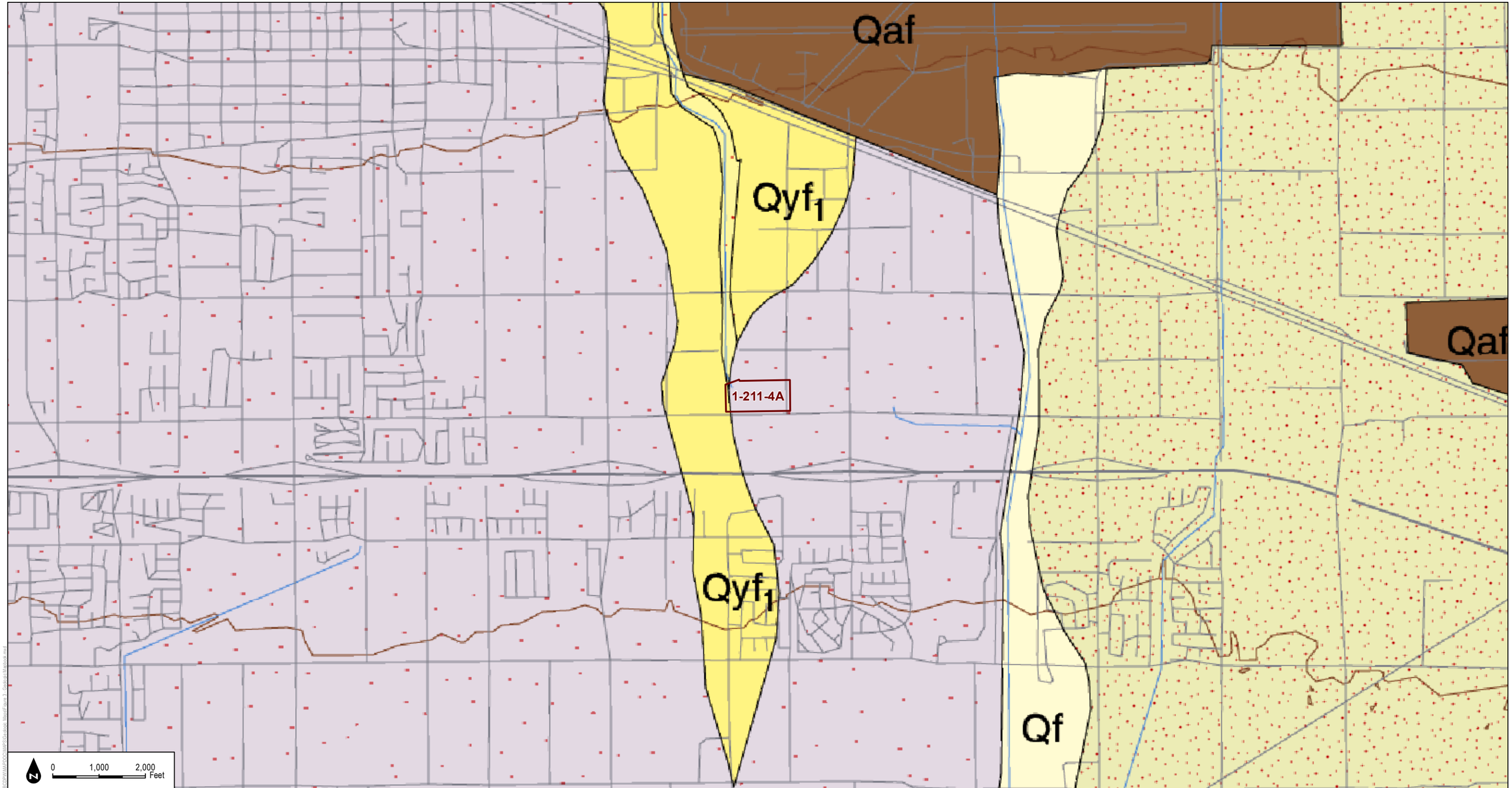
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

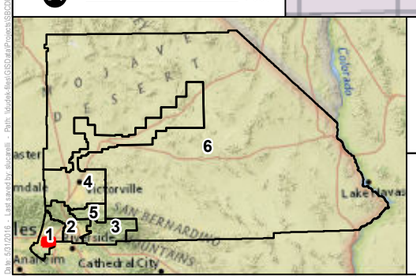
MAP 31

Zone 1 - Demens Creek Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

MAP 32

Zone 1 - Ely Basin #1

San Bernardino Department of Public Works

Geologic Map

Qaf

Qyf_1

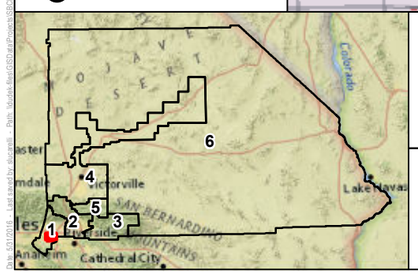
1-211-4B

Qaf

Qyf_1

Qf

0 1,000 2,000 Feet



Redbook Polygons

1:24,000

DUDEK

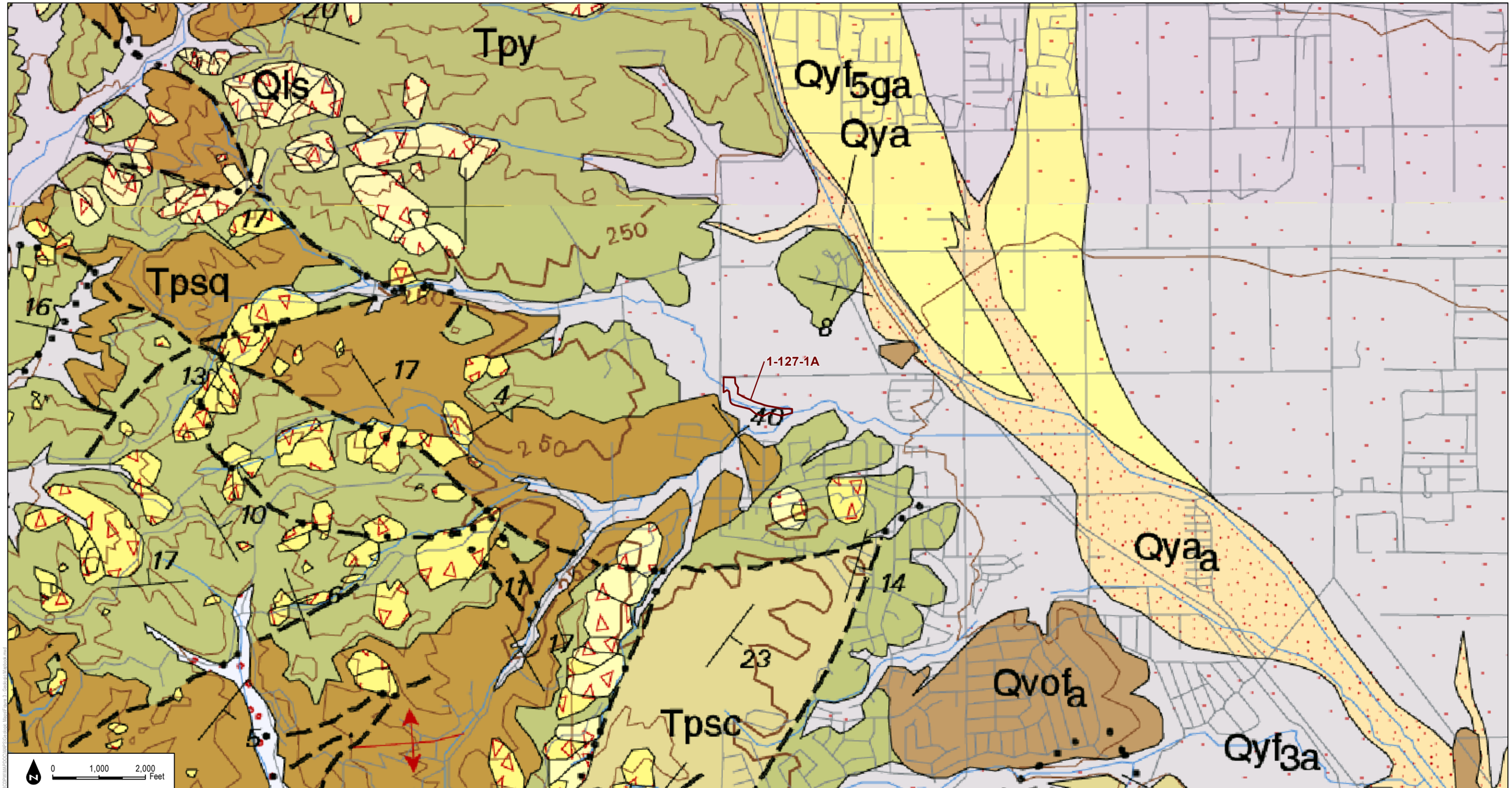
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

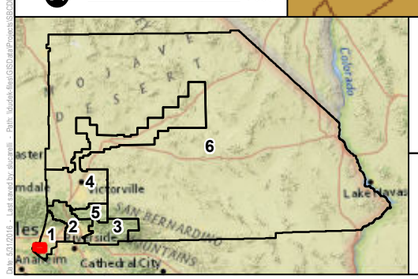
MAP 33

Zone 1 - Ely Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

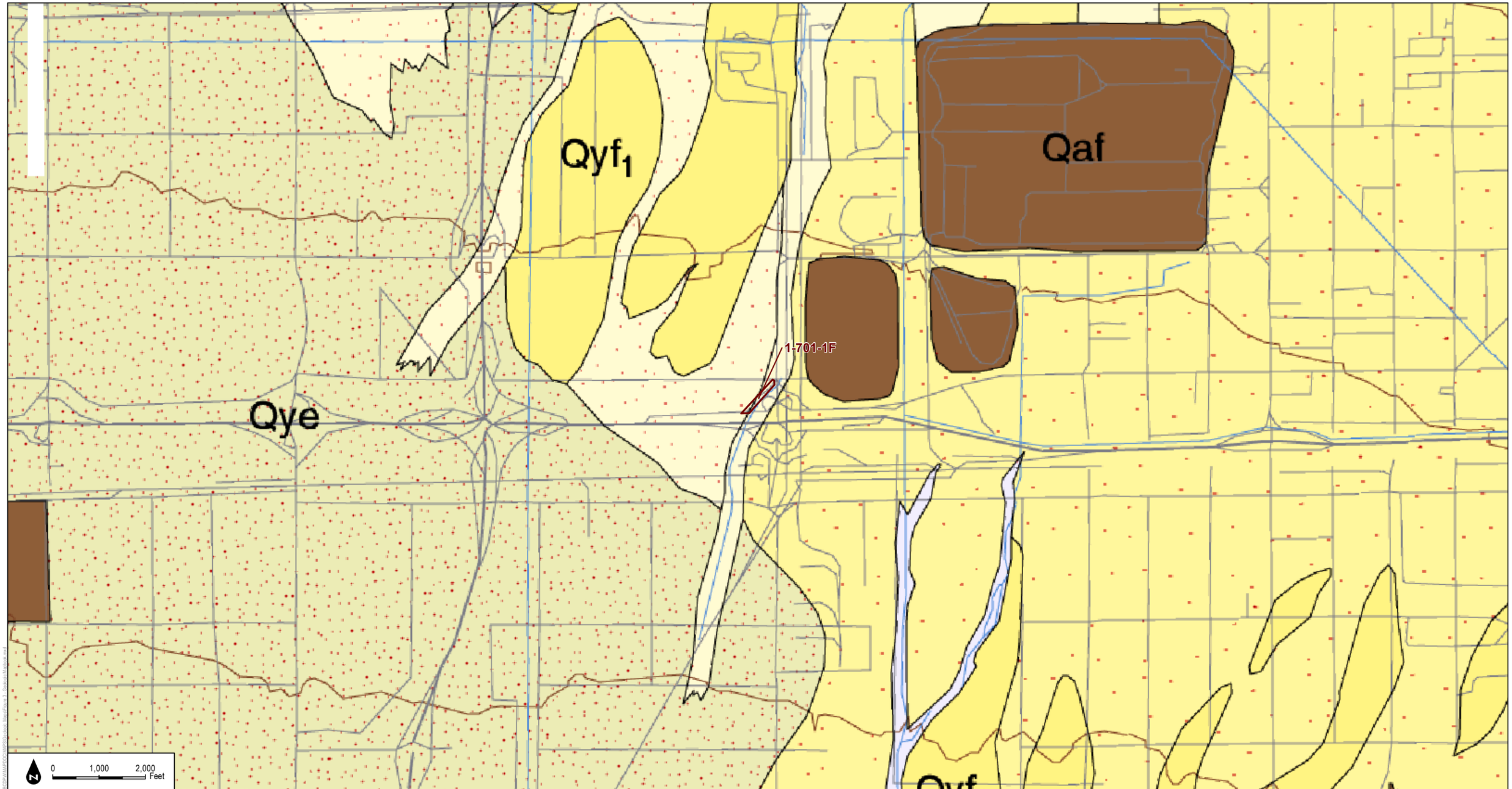
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

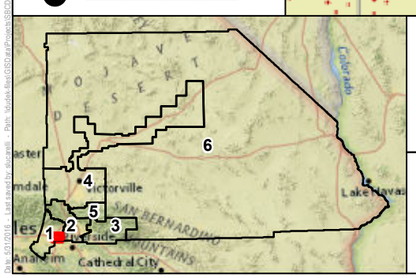
MAP 34

Zone 1 - English Canyon (Little Chino Creek)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

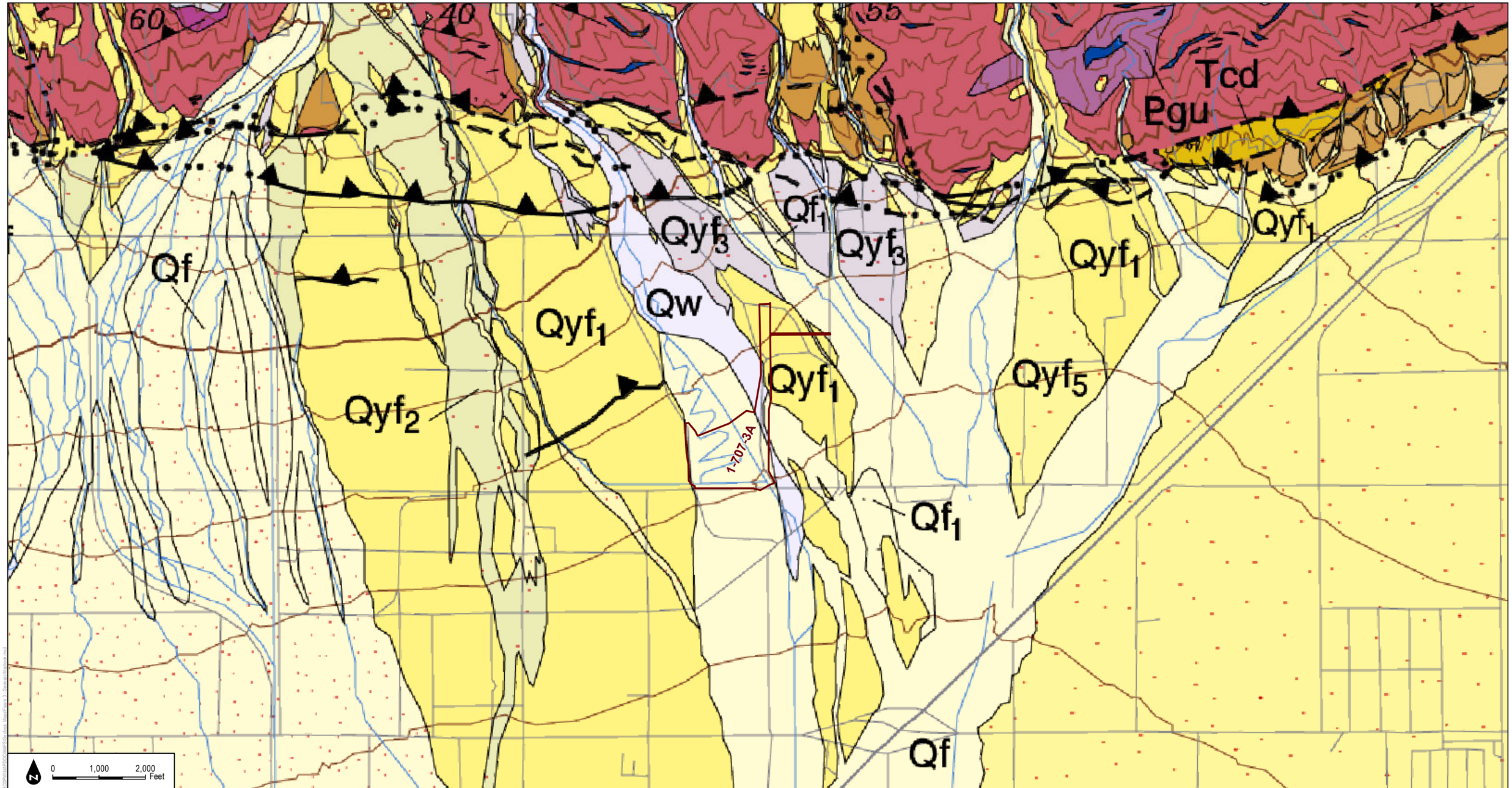
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

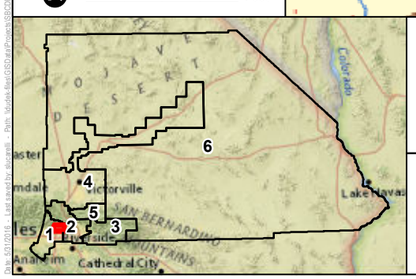
MAP 35

Zone 1 - Etiwanda Creek Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

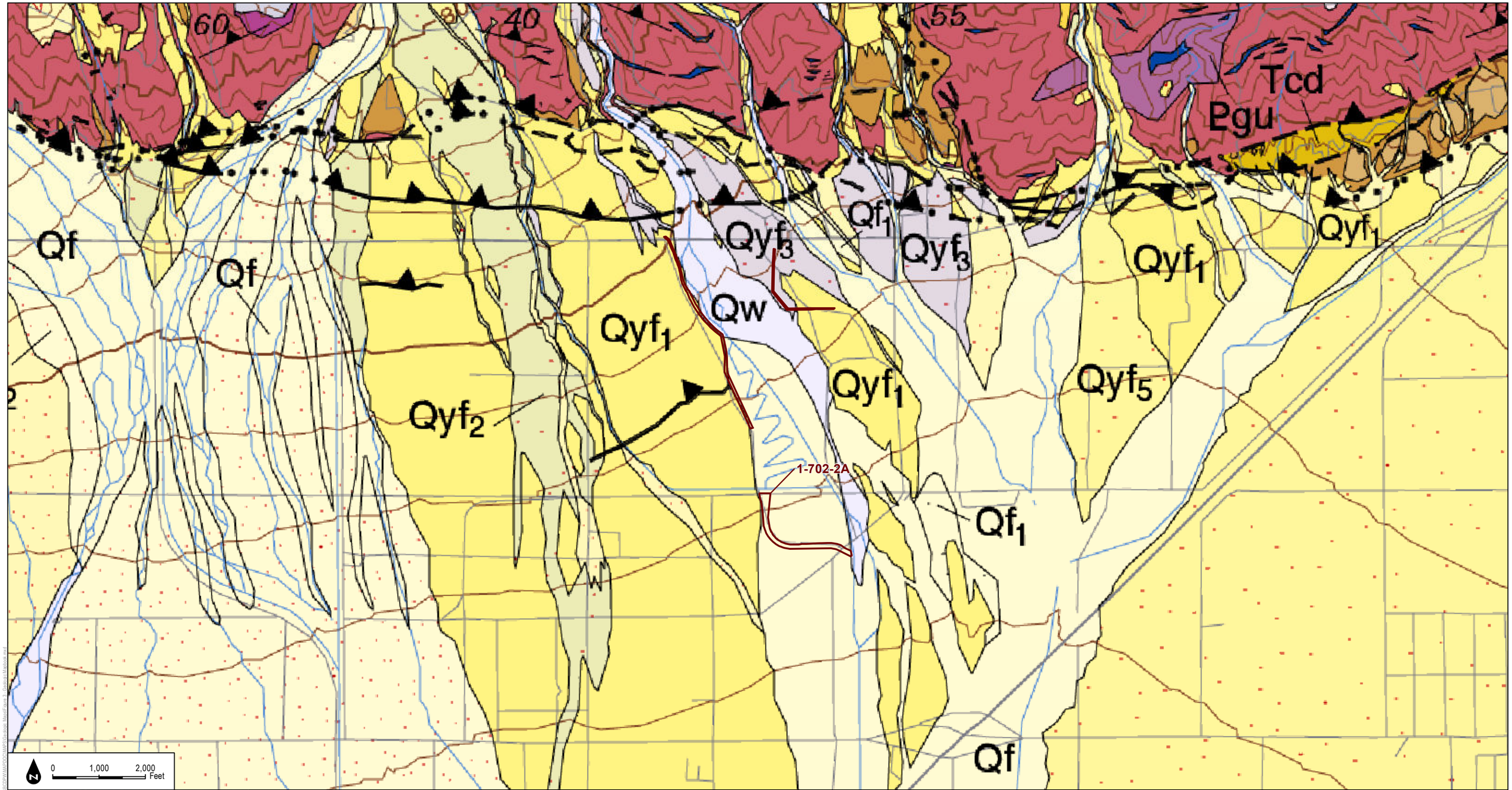
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

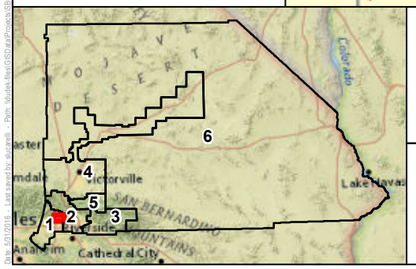
MAP 36

Zone 1 - Etiwanda Debris Basin (Etiwanda Creek Dam)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

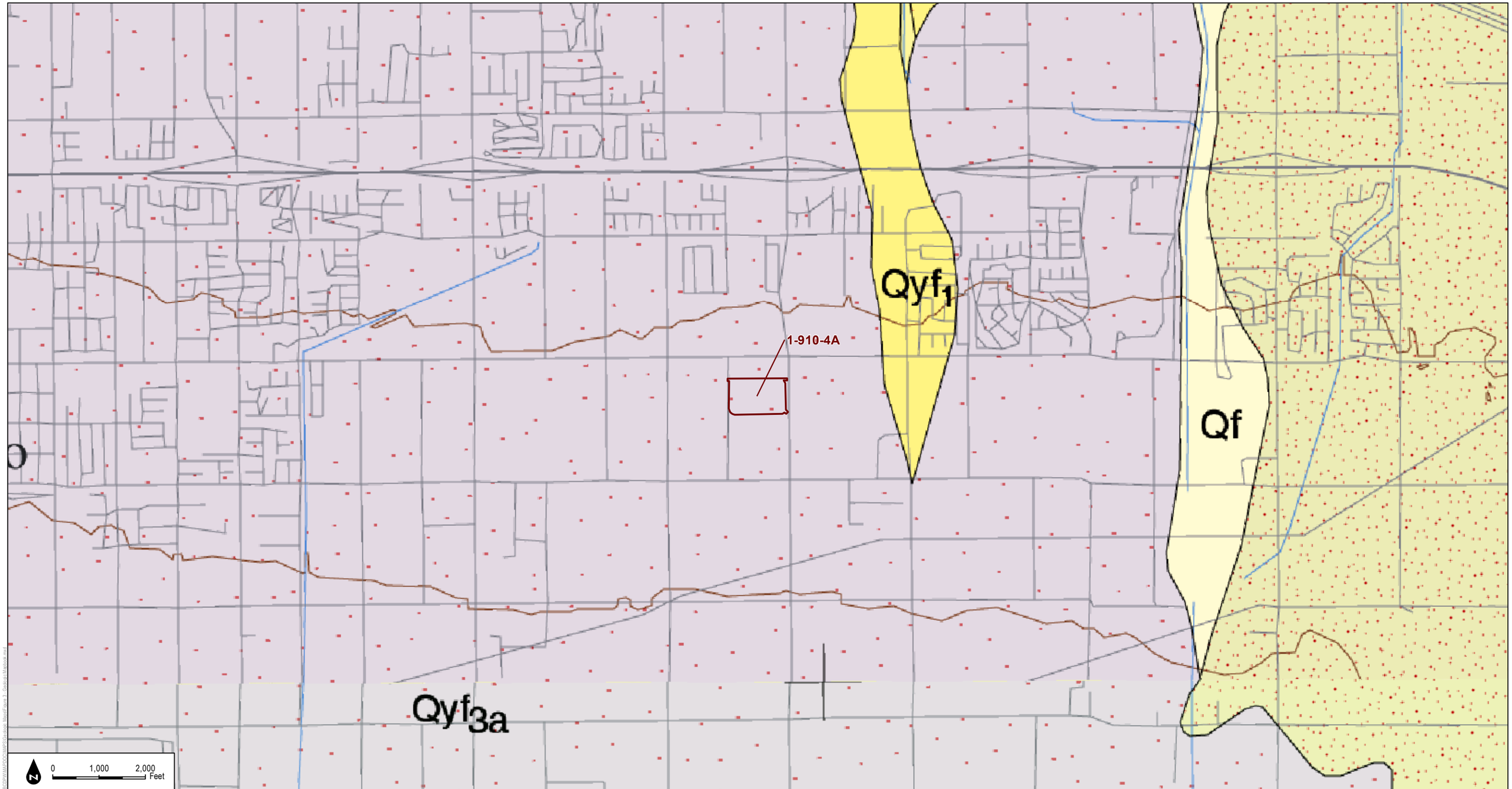
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

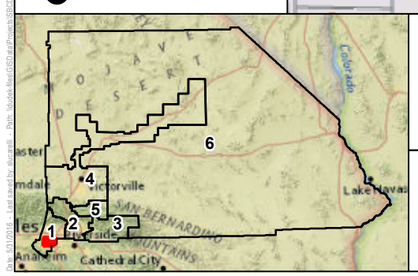
MAP 37

Zone 1 - Etiwanda Sprdg Grnds

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

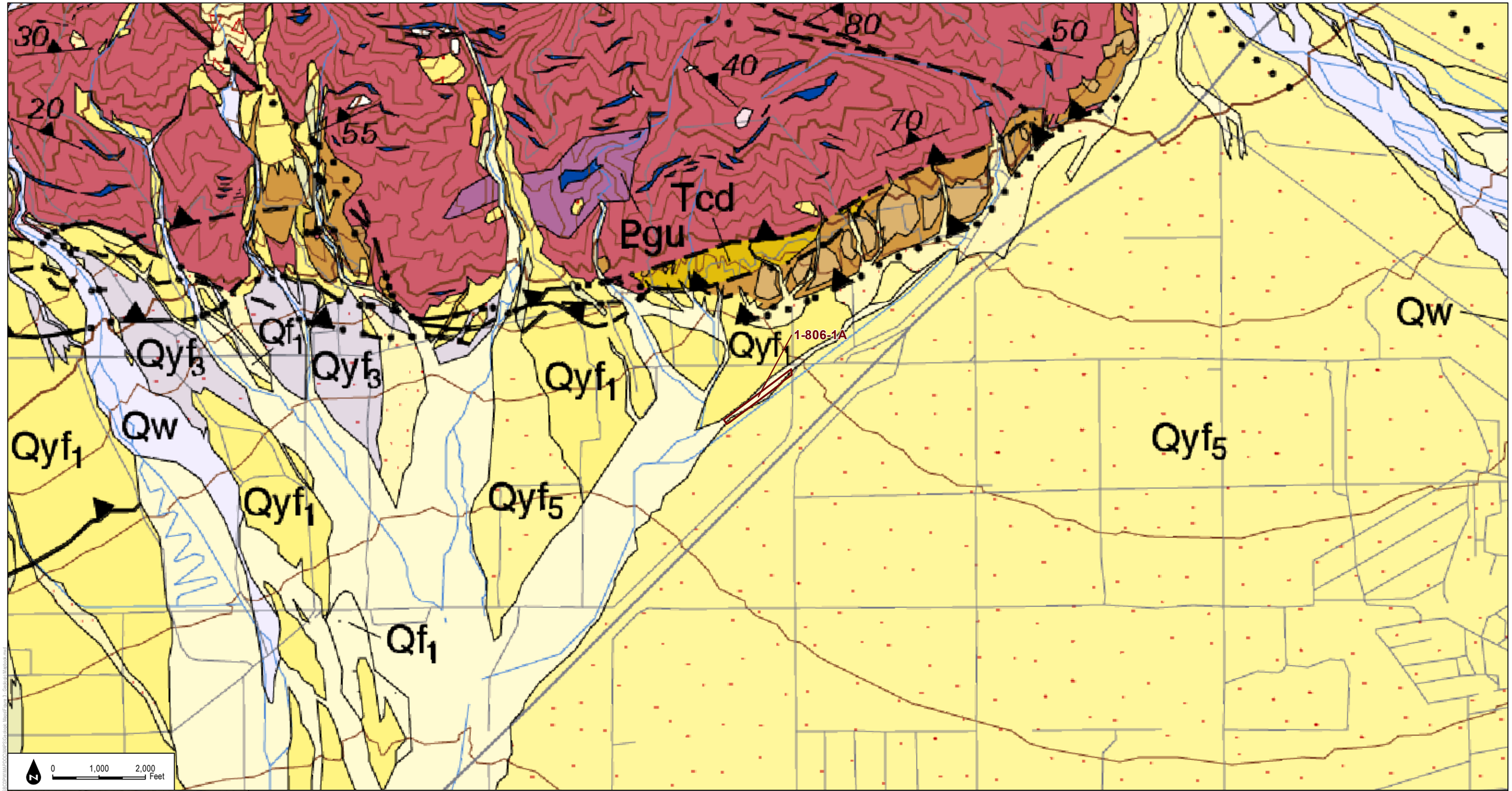
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

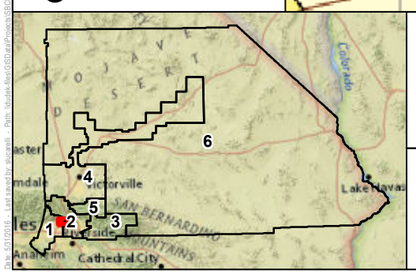
MAP 38

Zone 1 - Grove Avenue Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

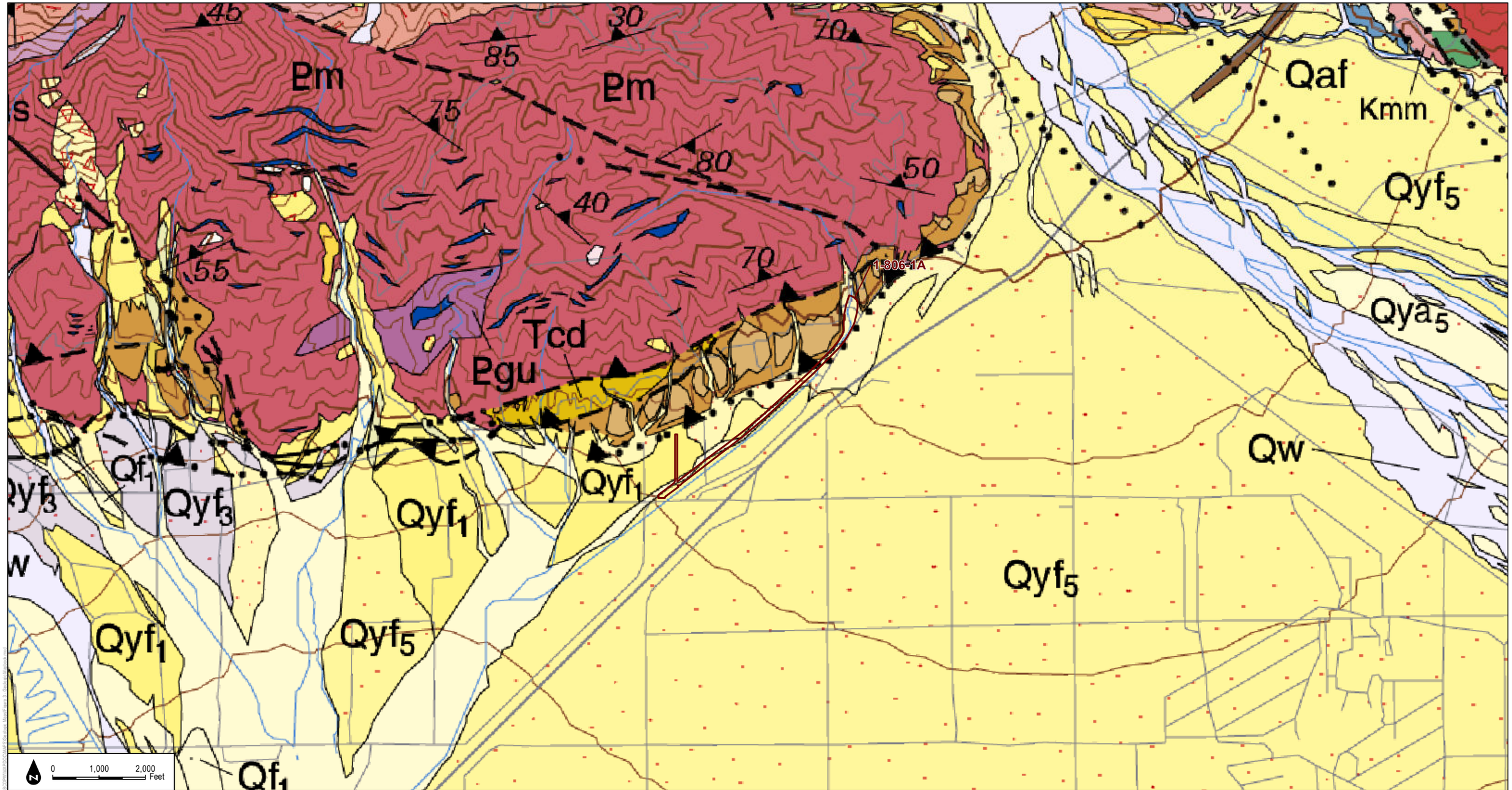
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

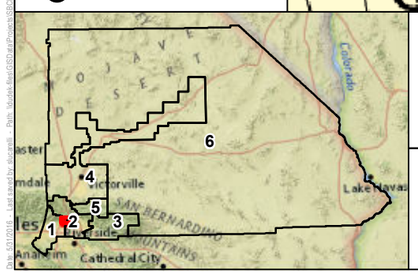
MAP 39

Zone 1 - Hawker-Crawford

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

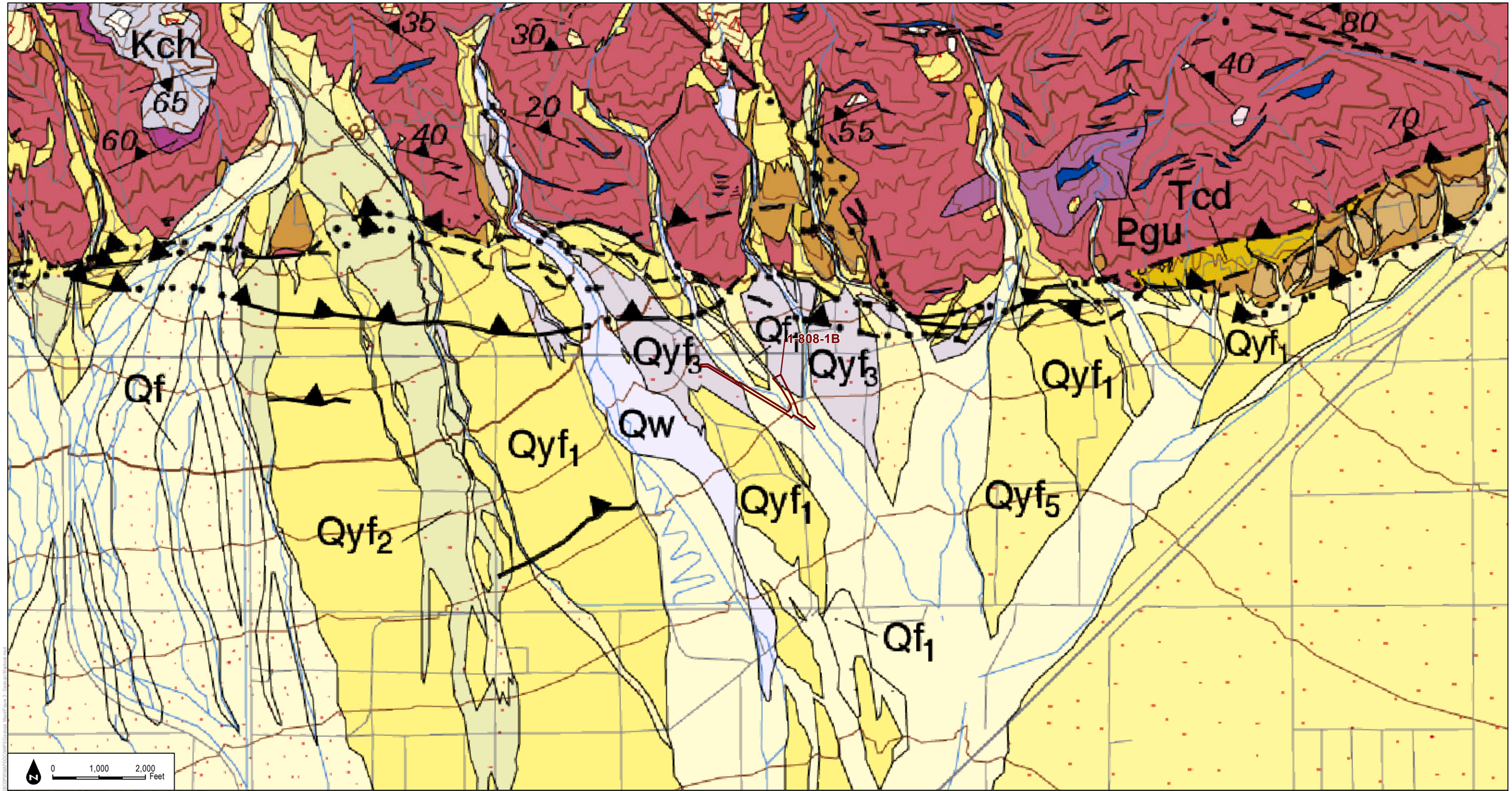
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

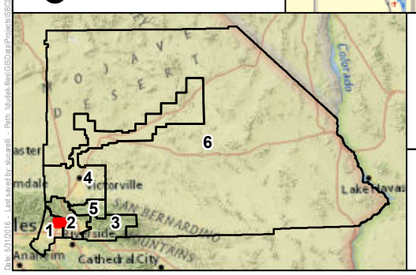
MAP 40

Zone 1 - Hawker-Crawford Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

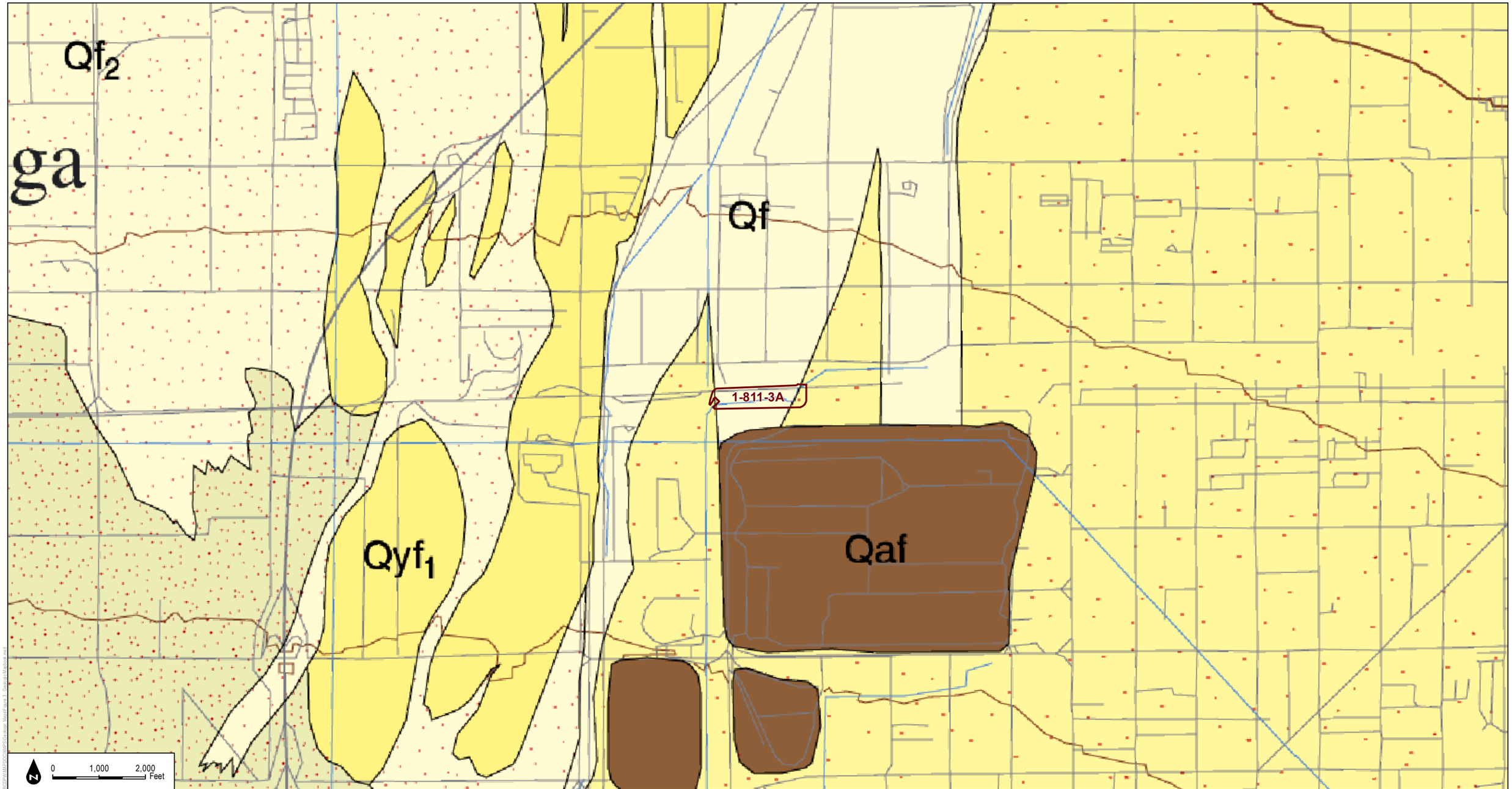
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

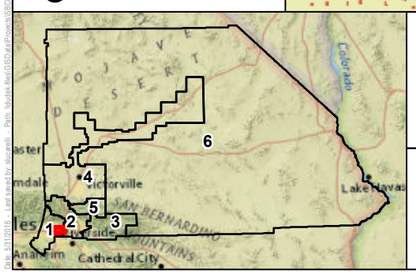
MAP 41

Zone 1 - Henderson Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

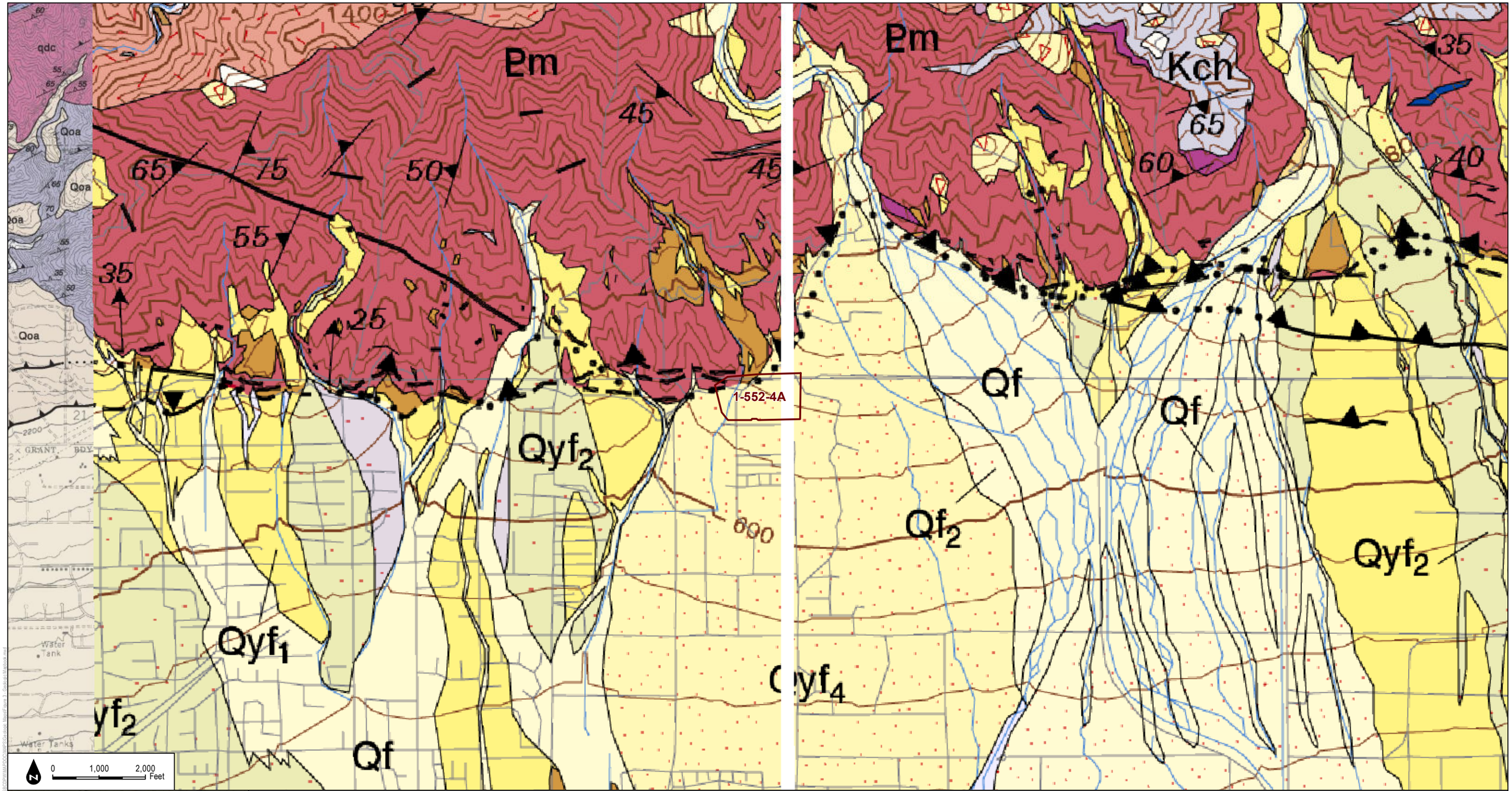
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

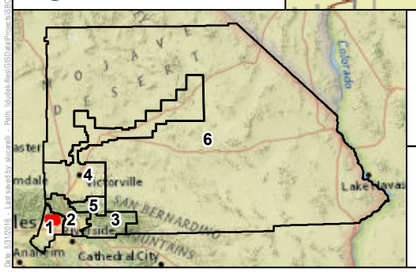
MAP 42

Zone 1 - Hickory Basin (DSOD)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

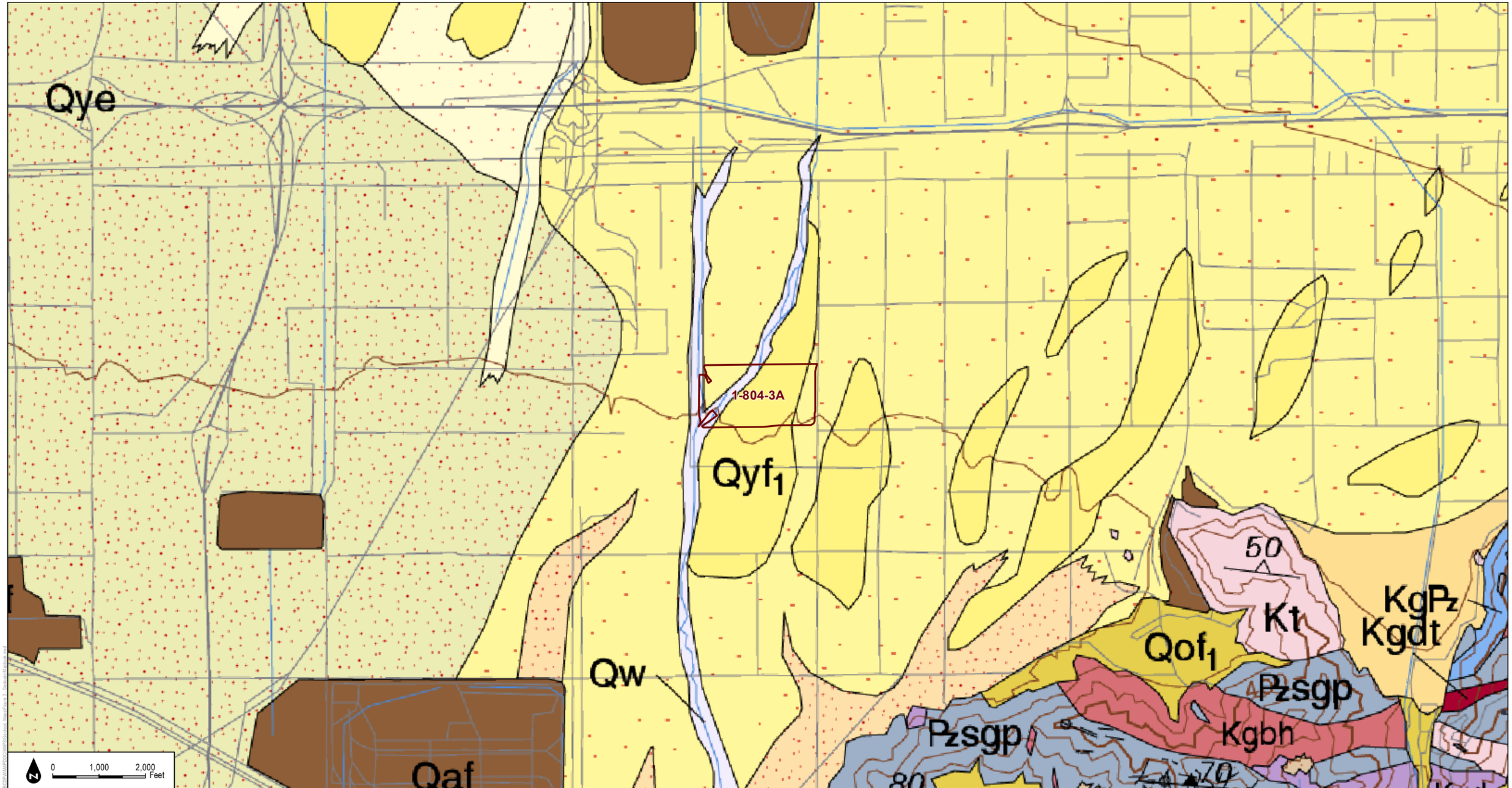
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

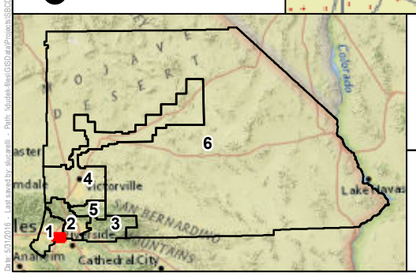
MAP 43

Zone 1 - Hillside Basin, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

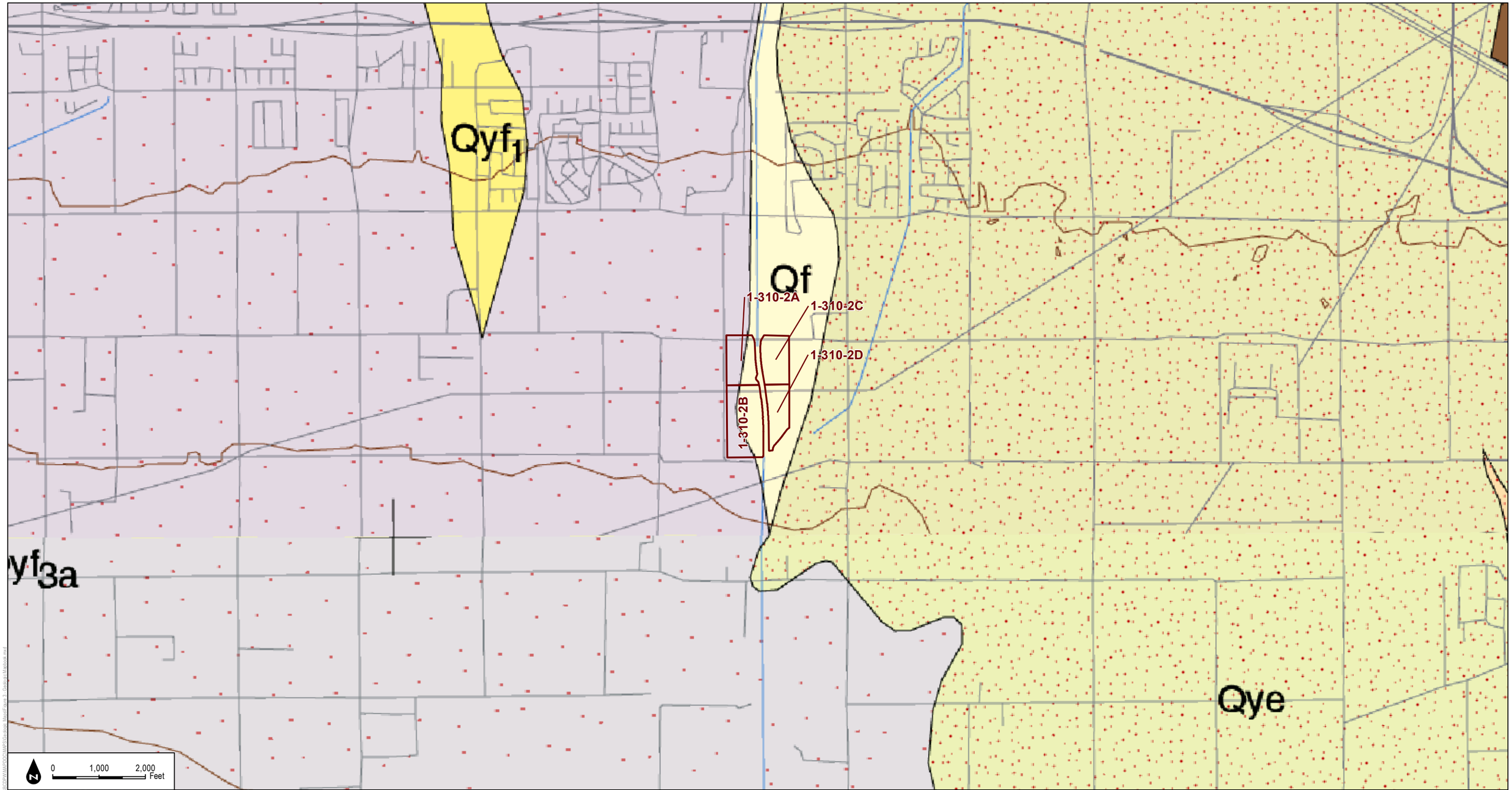
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

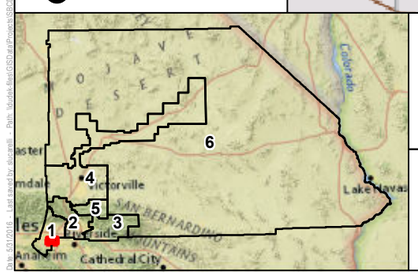
MAP 44

Zone 1 - Jurupa Basin (DSOD)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

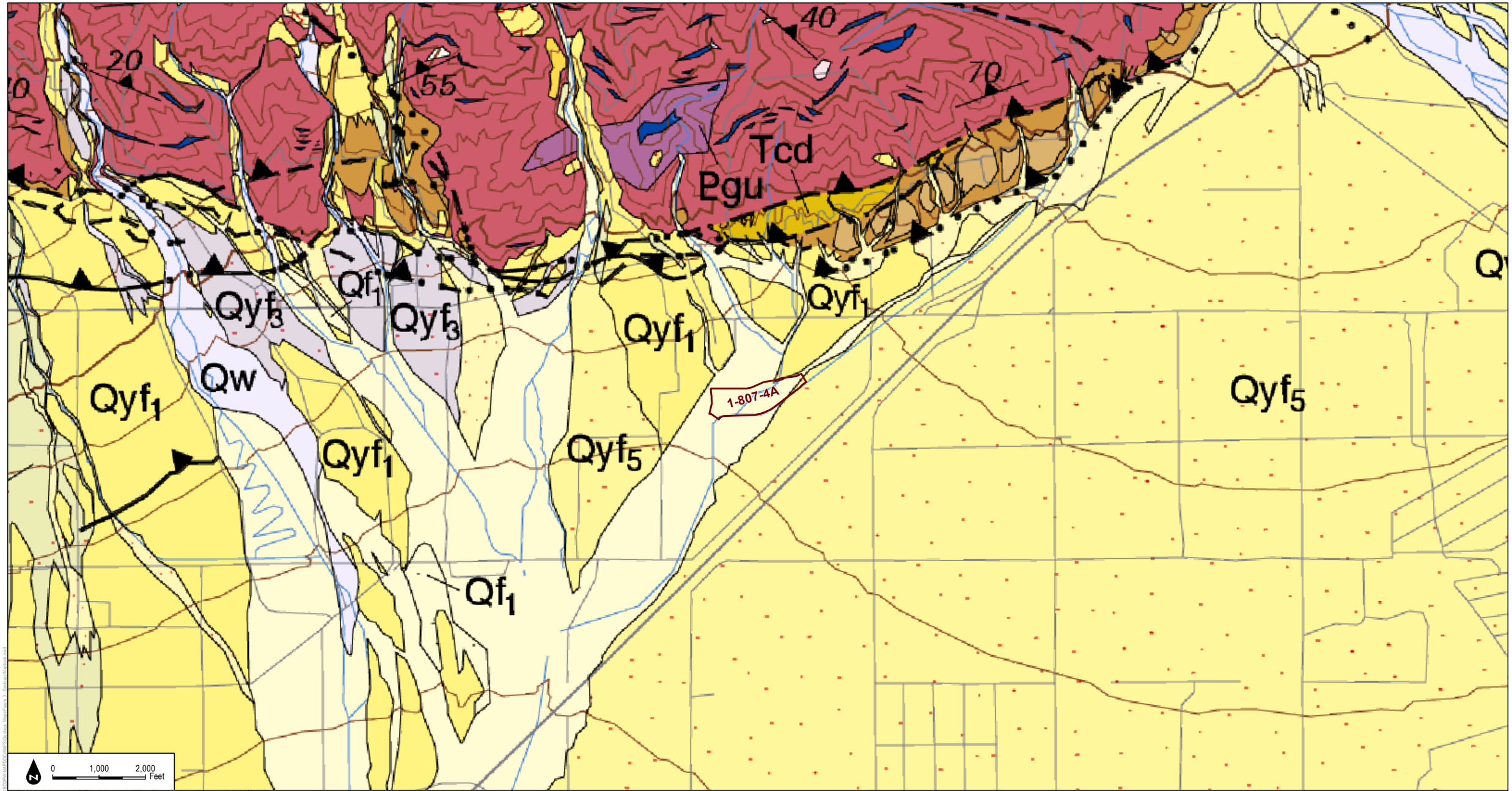
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

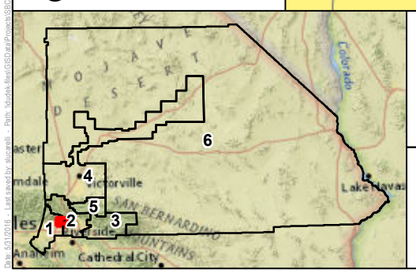
MAP 45

Zone 1 - Lower Cucamonga Sprdg Grnds

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

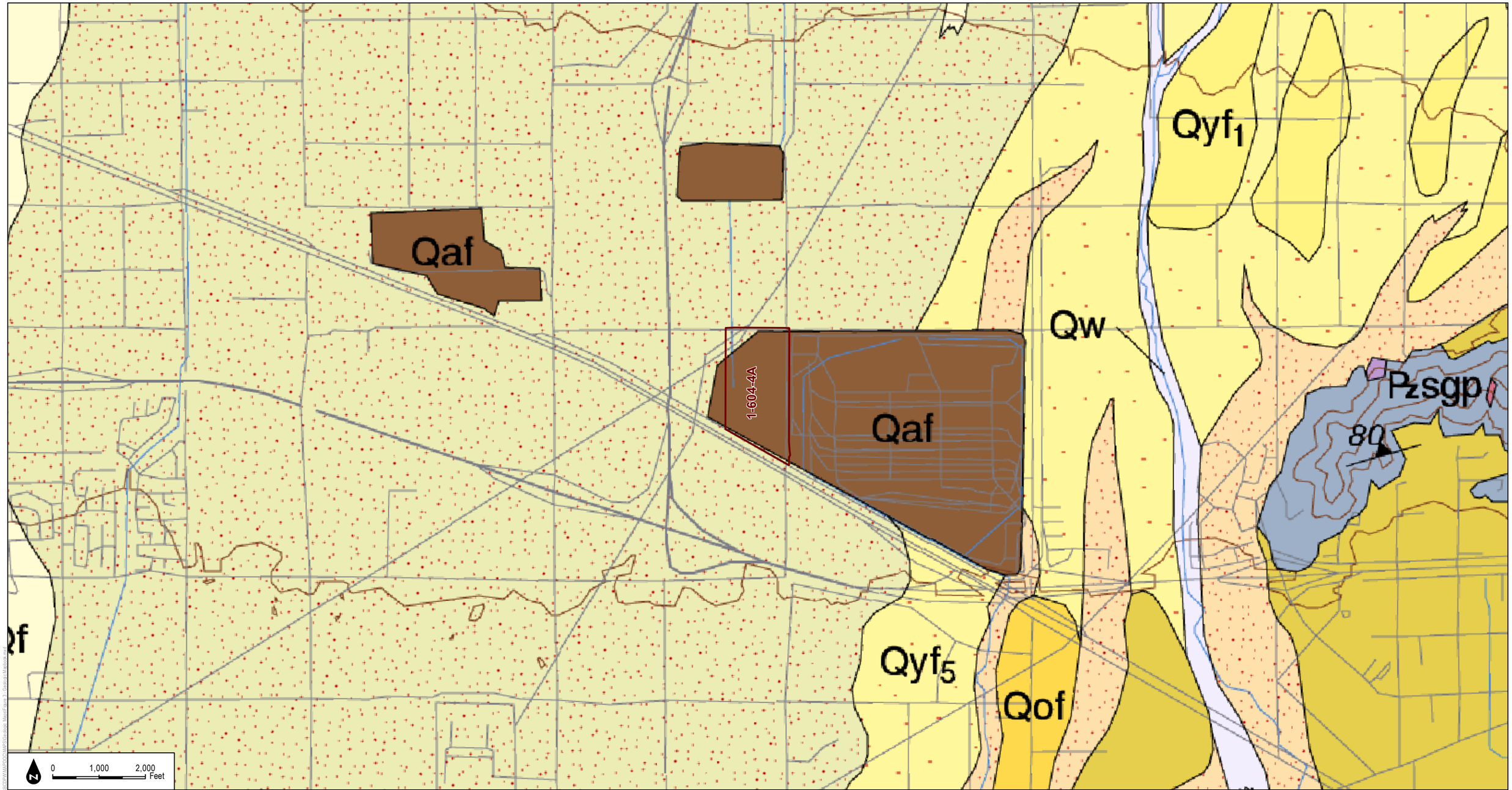
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

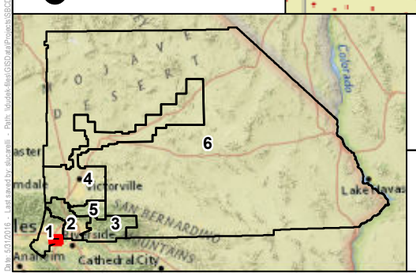
MAP 46

Zone 1 - Rich Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

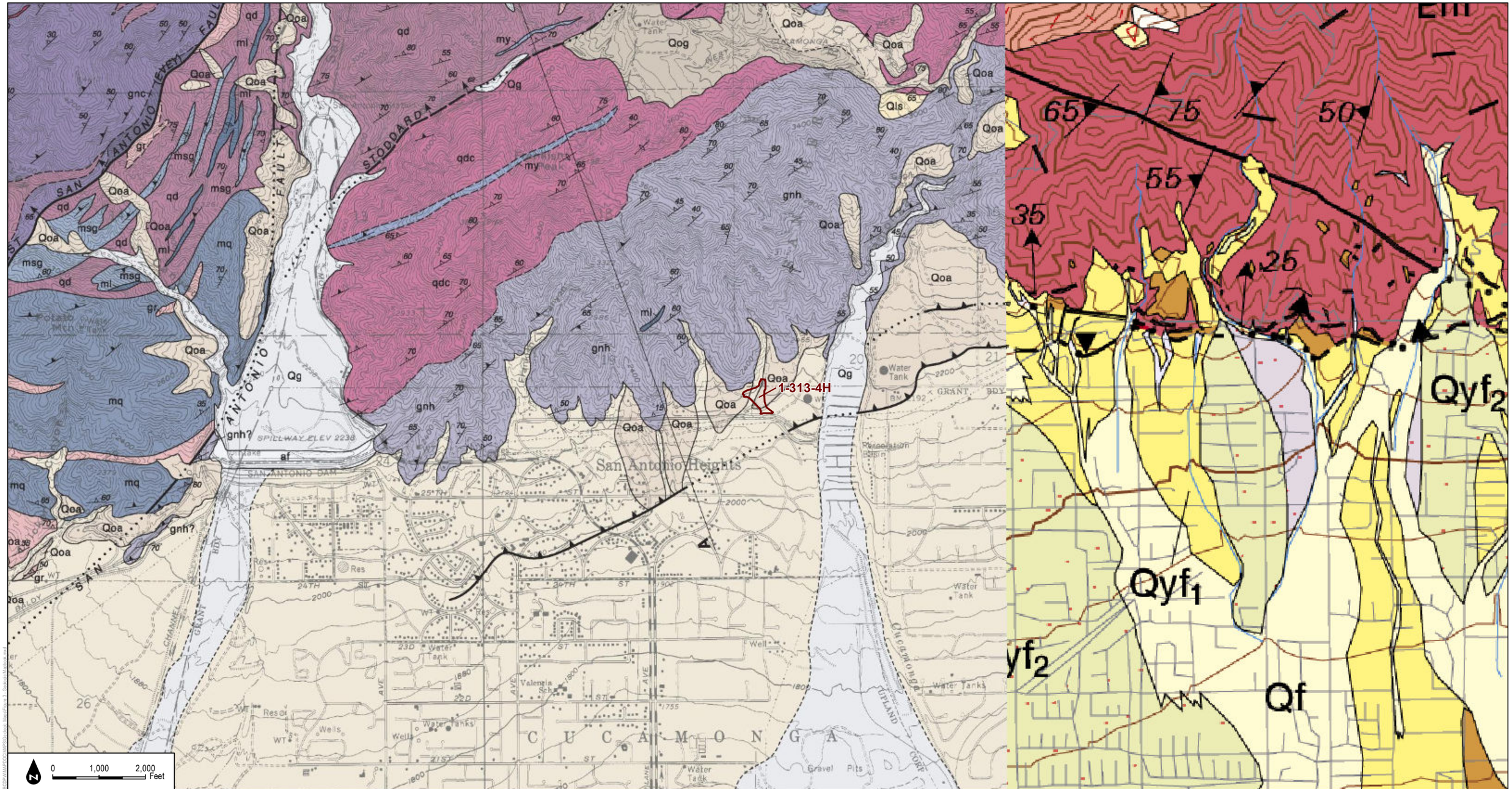
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

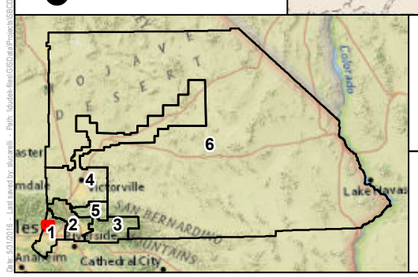
MAP 47

Zone 1 - Riverside Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

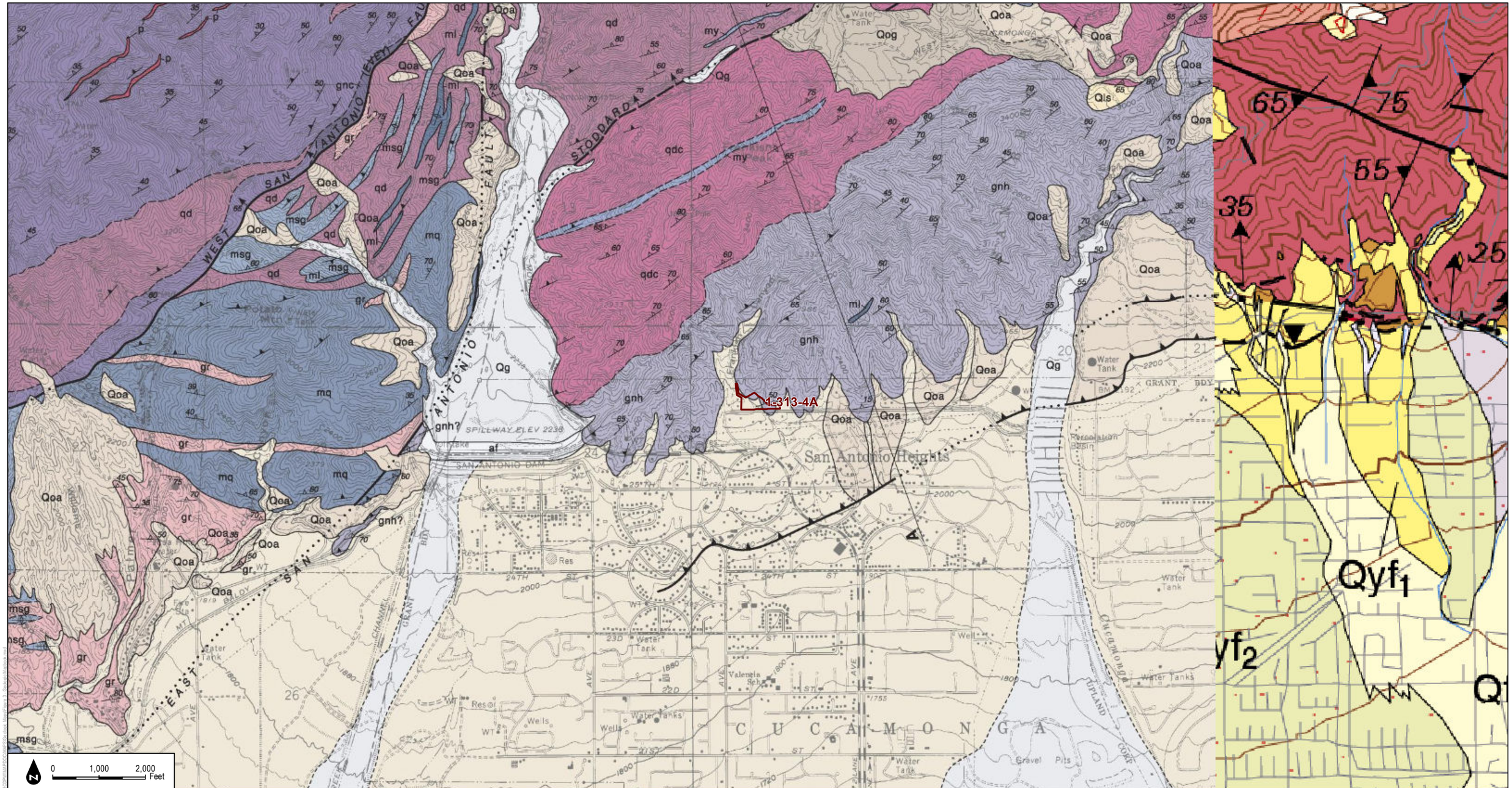
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

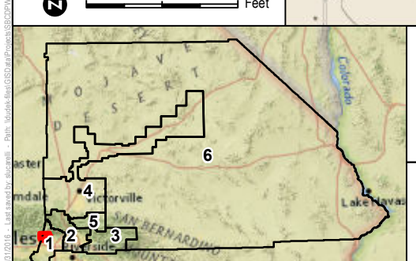
MAP 48

Zone 1 - San Antonio Heights #6, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

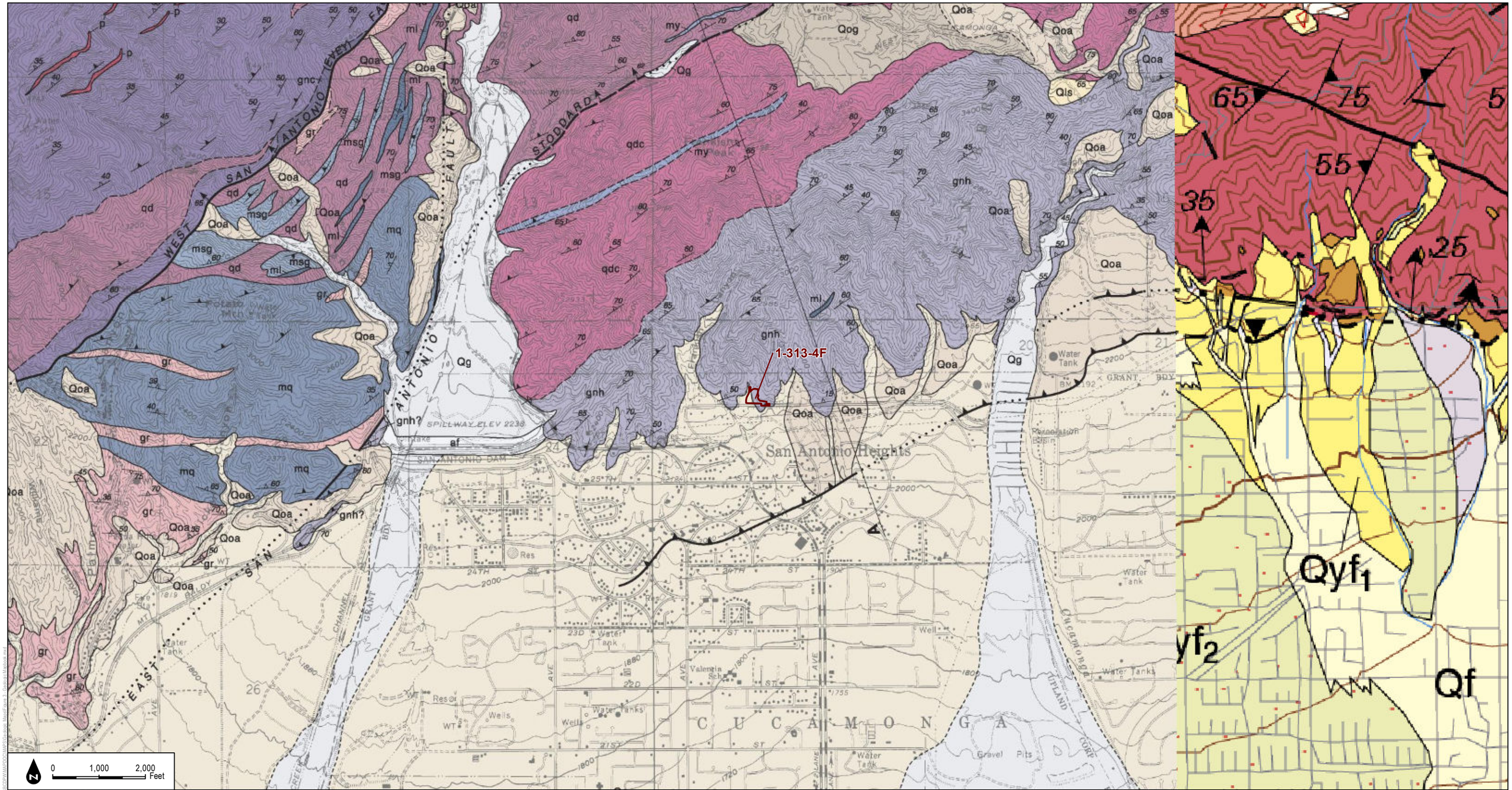
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

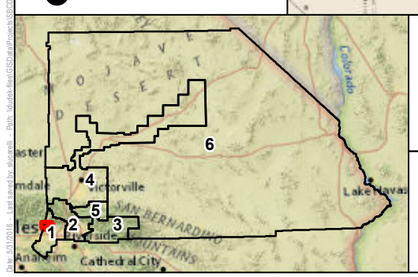
MAP 49

Zone 1 - San Antonio Heights Basin #1 (Frankish), COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

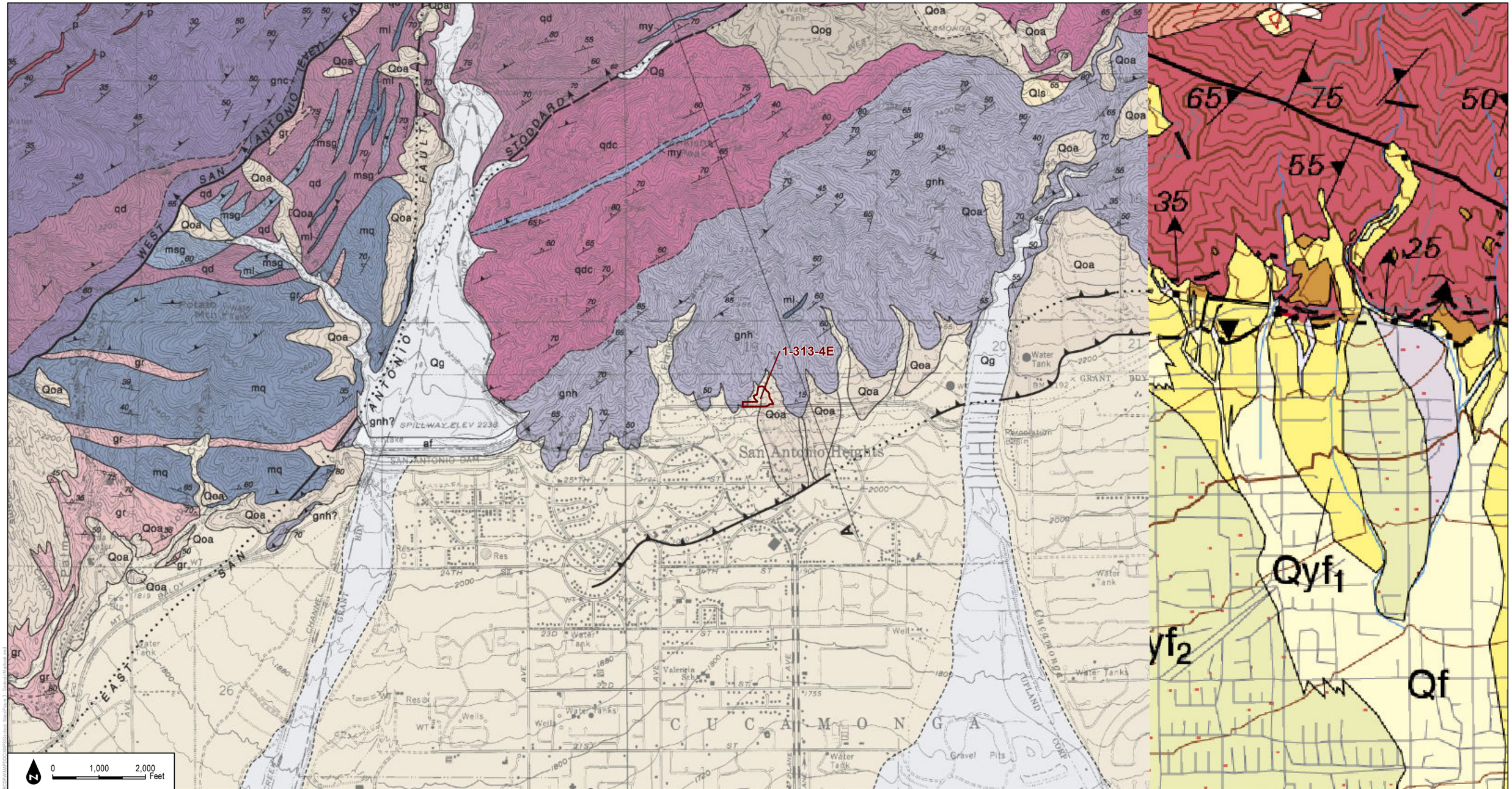
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

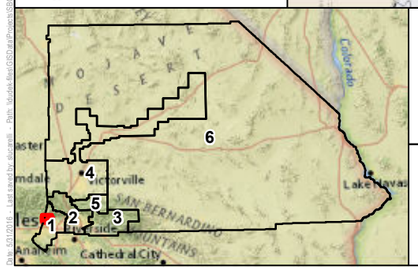
MAP 50

Zone 1 - San Antonio Heights Basin #2 (Meryl), COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

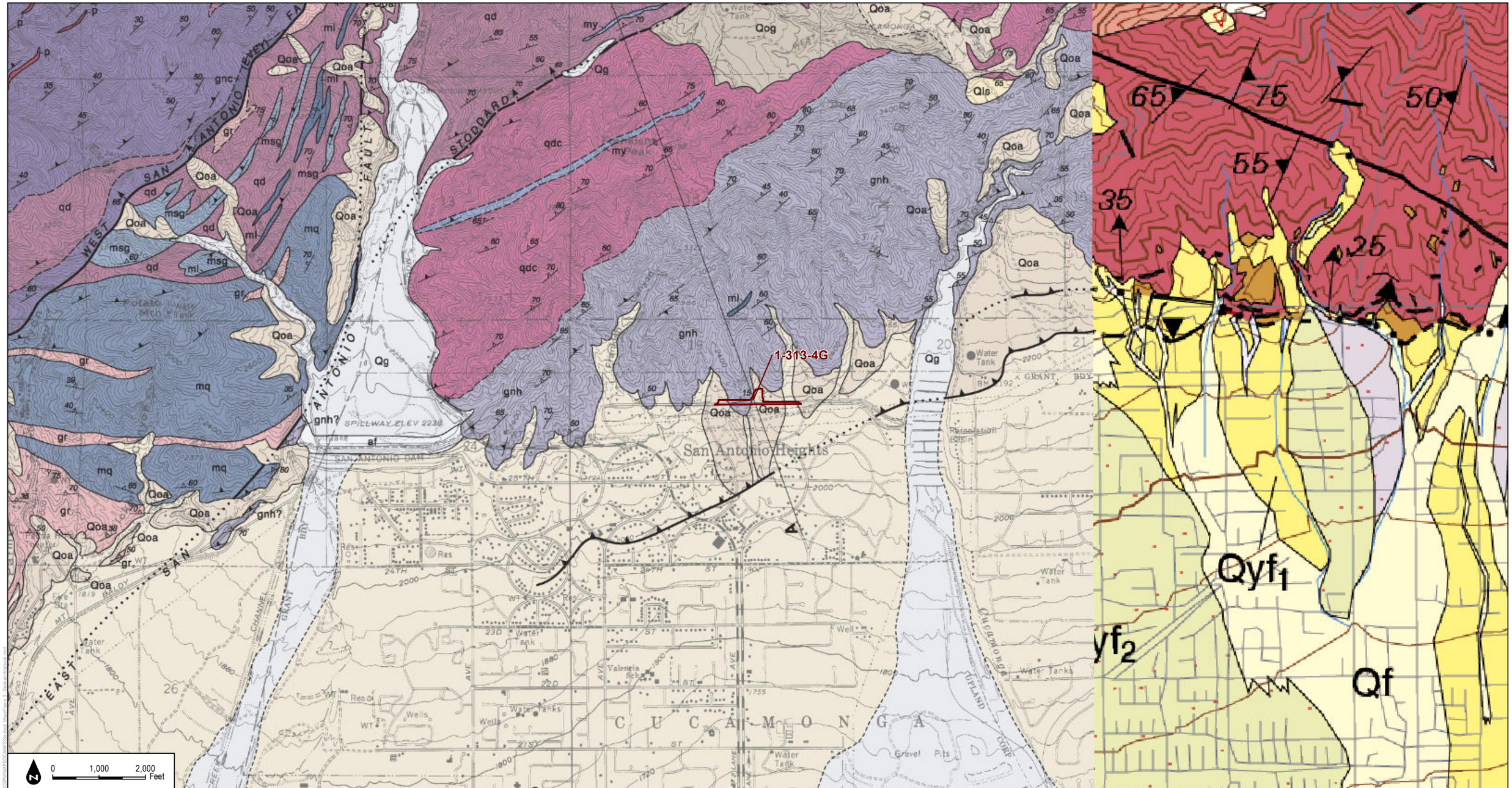
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

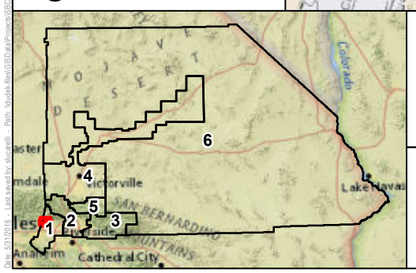
MAP 51

Zone 1 - San Antonio Heights Basin #3 (Cherbak), COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

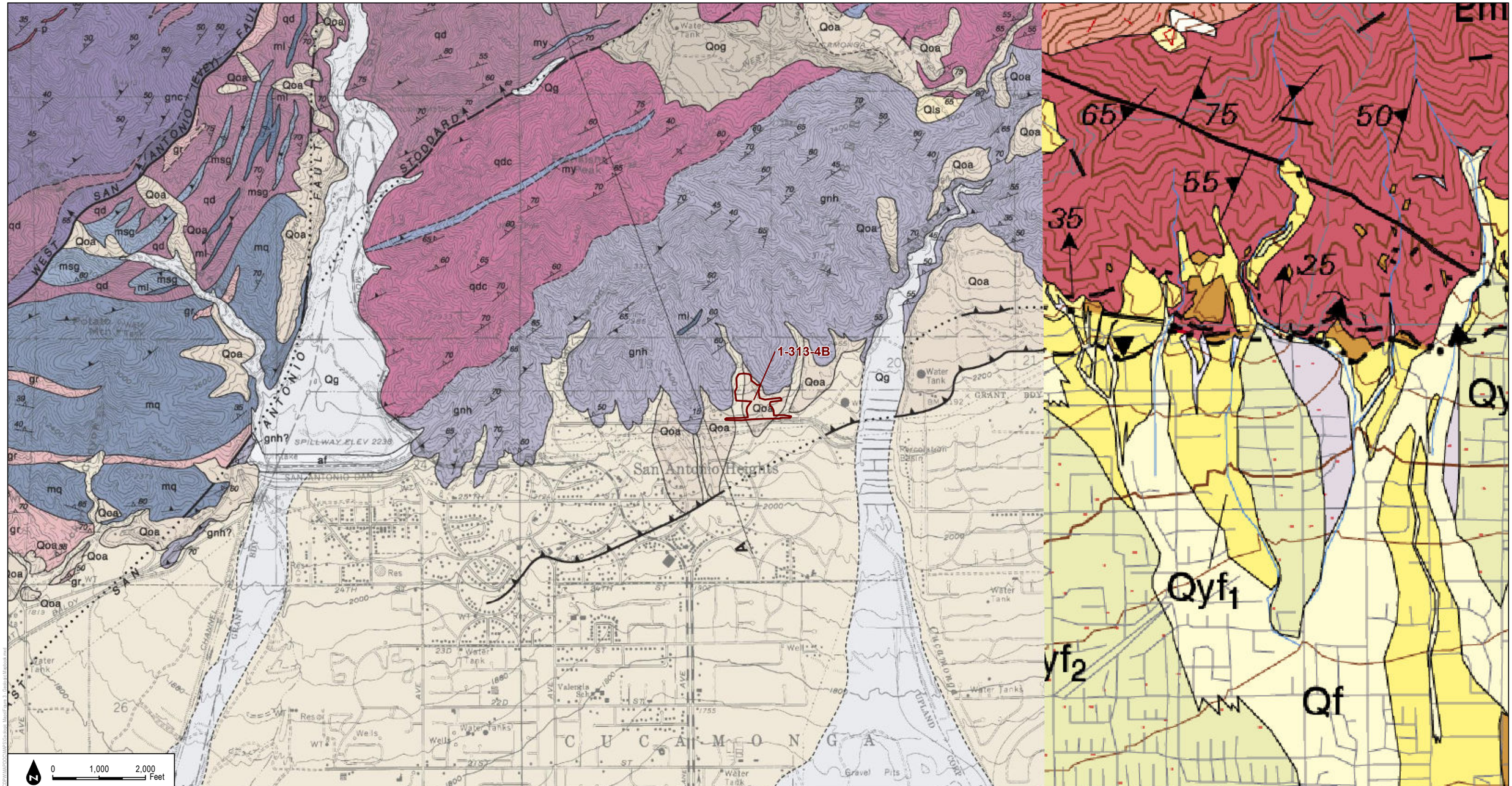
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

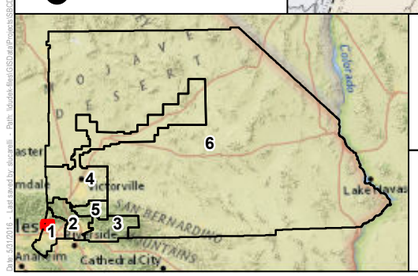
MAP 52

Zone 1 - San Antonio Heights Basin #4 (Gray), COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

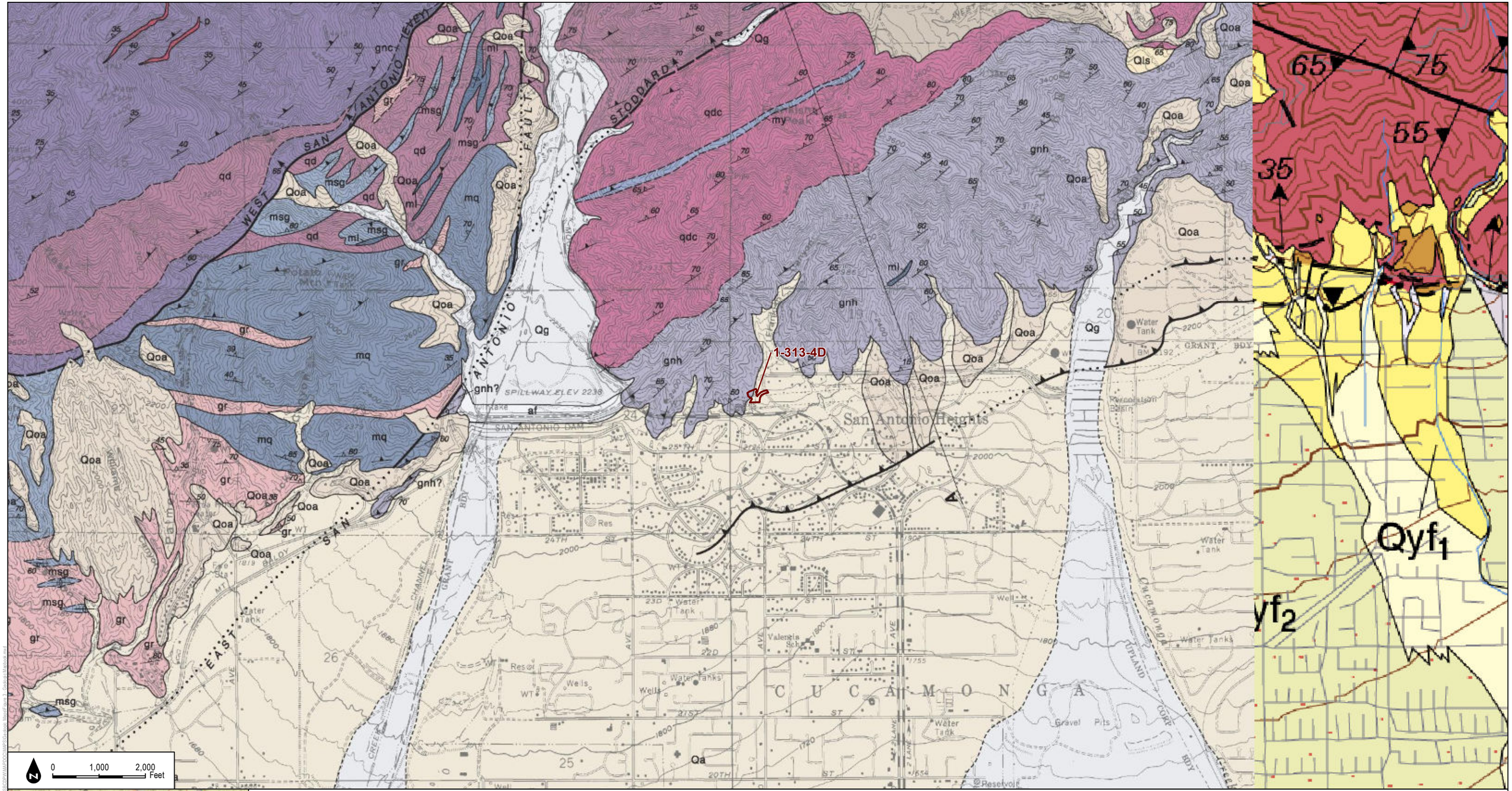
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

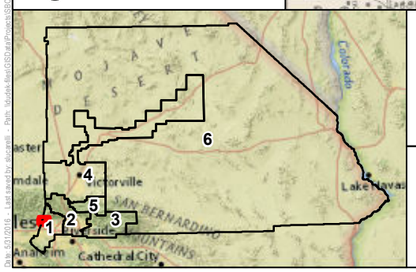
MAP 53

Zone 1 - San Antonio Heights Basin #5 (Marble), COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

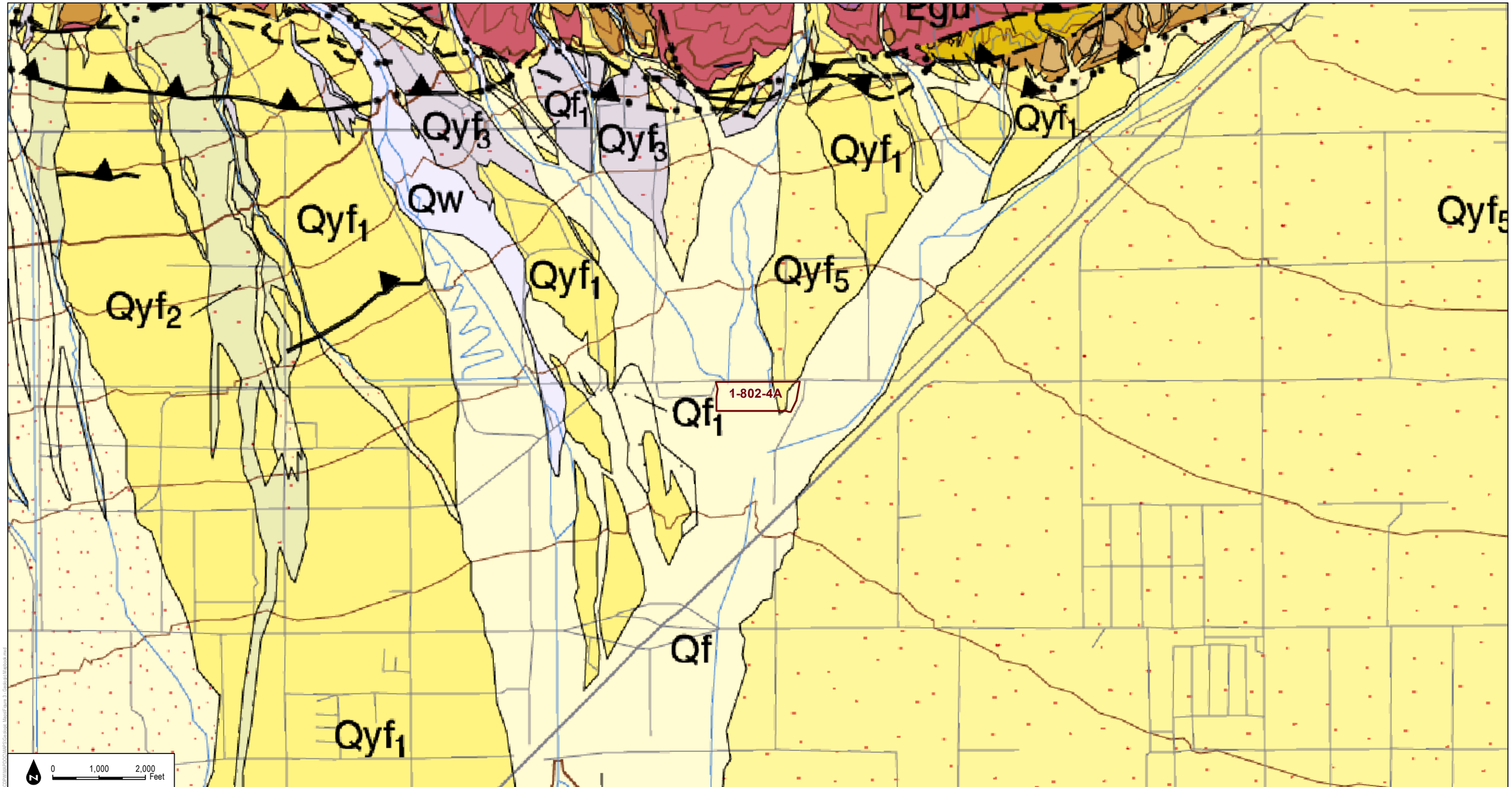
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

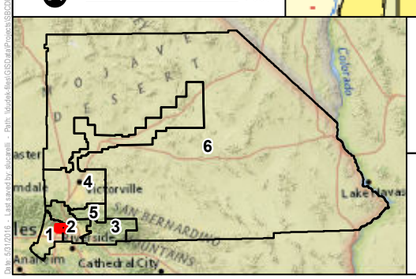
MAP 54

Zone 1 - San Antonio Heights Basin (West Frankish)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

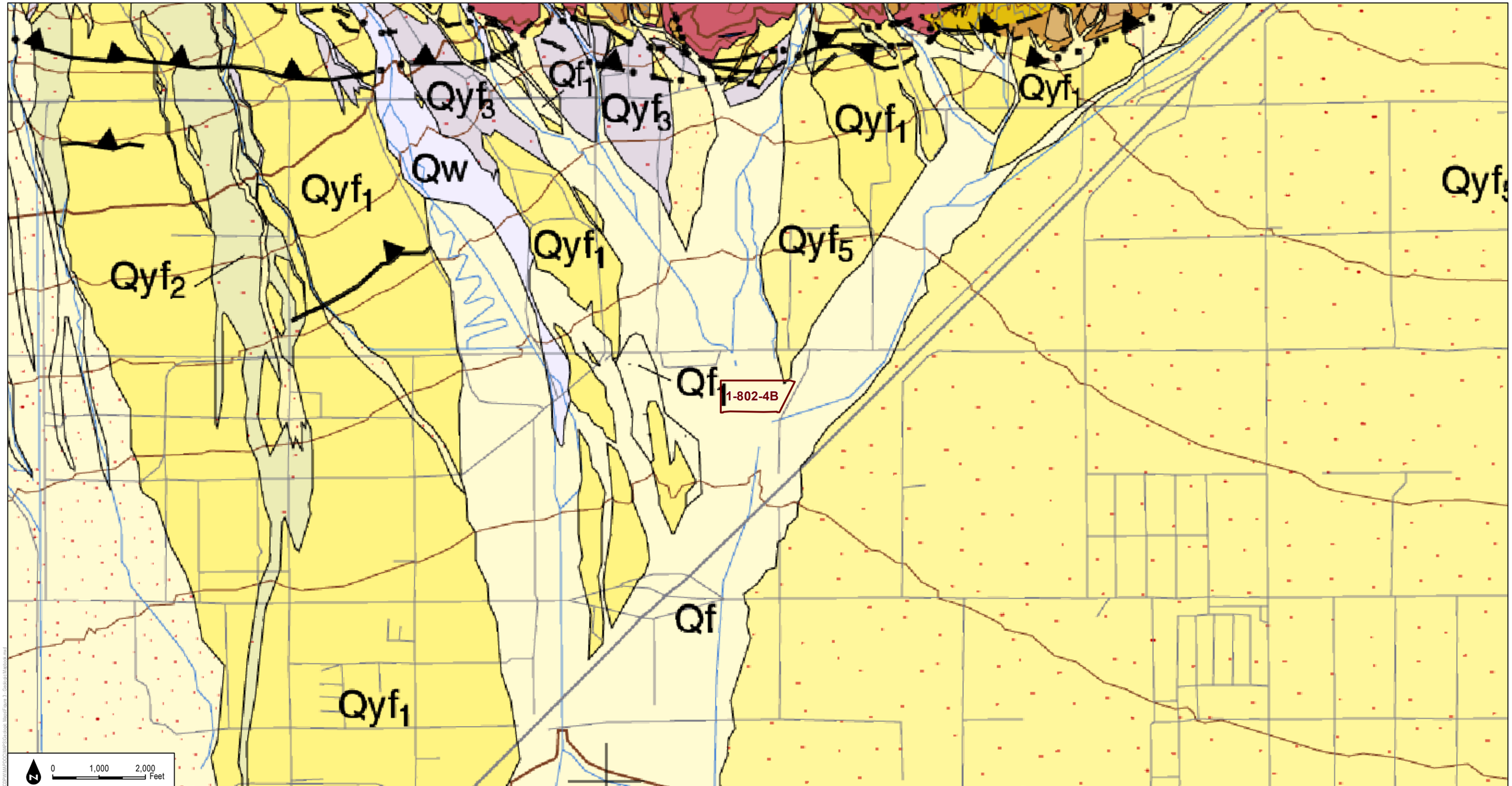
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

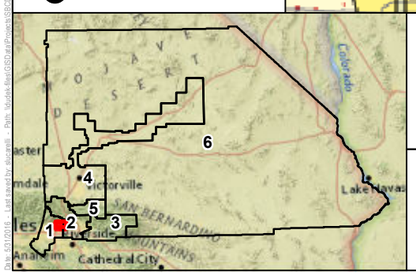
MAP 55

Zone 1 - San Sevaine Basin #1

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

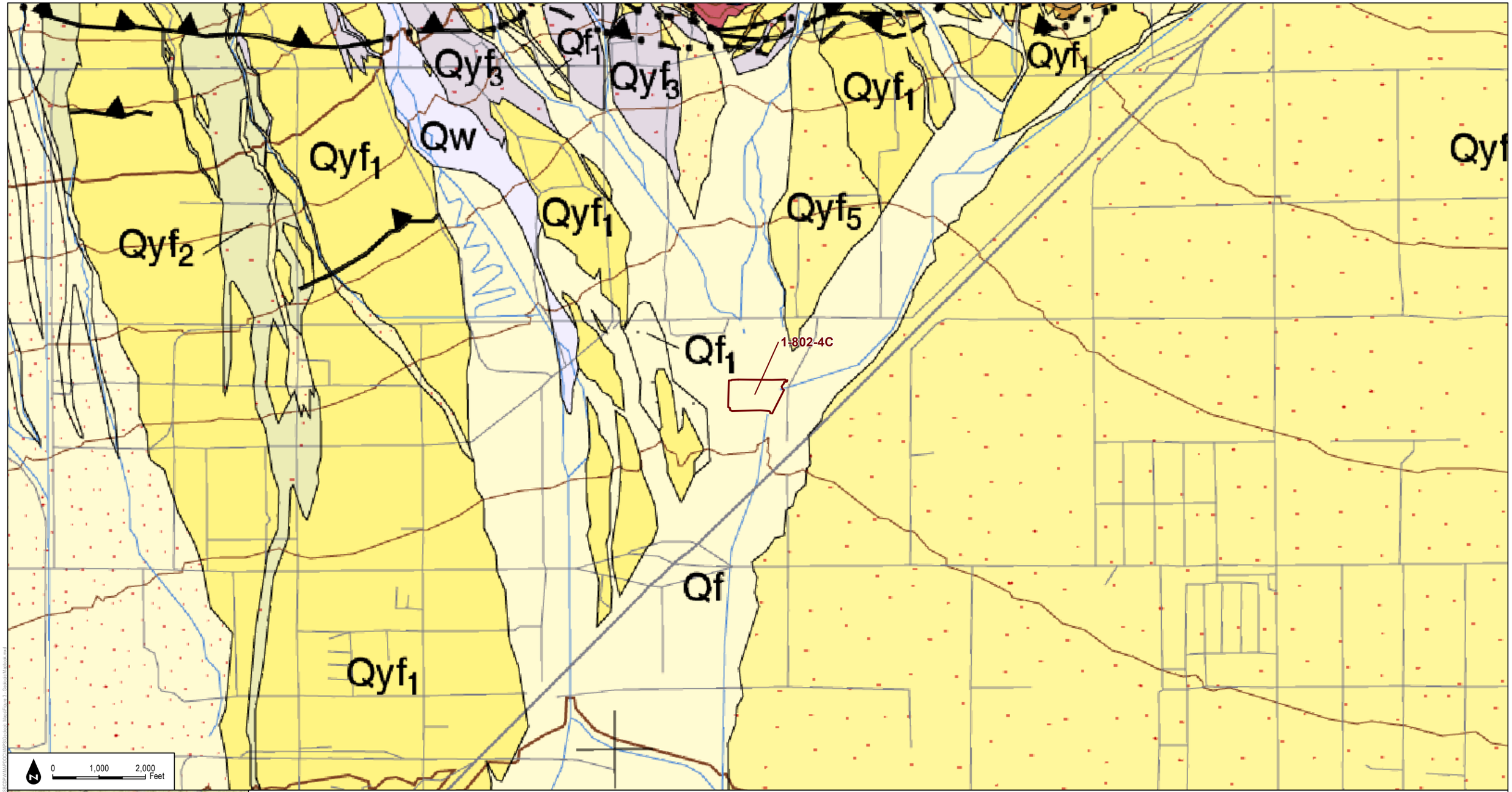
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

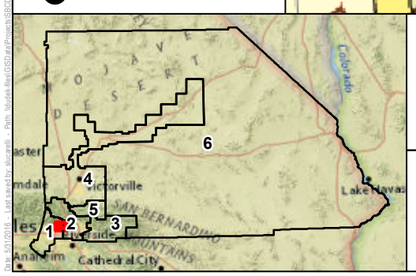
MAP 56

Zone 1 - San Sevaine Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

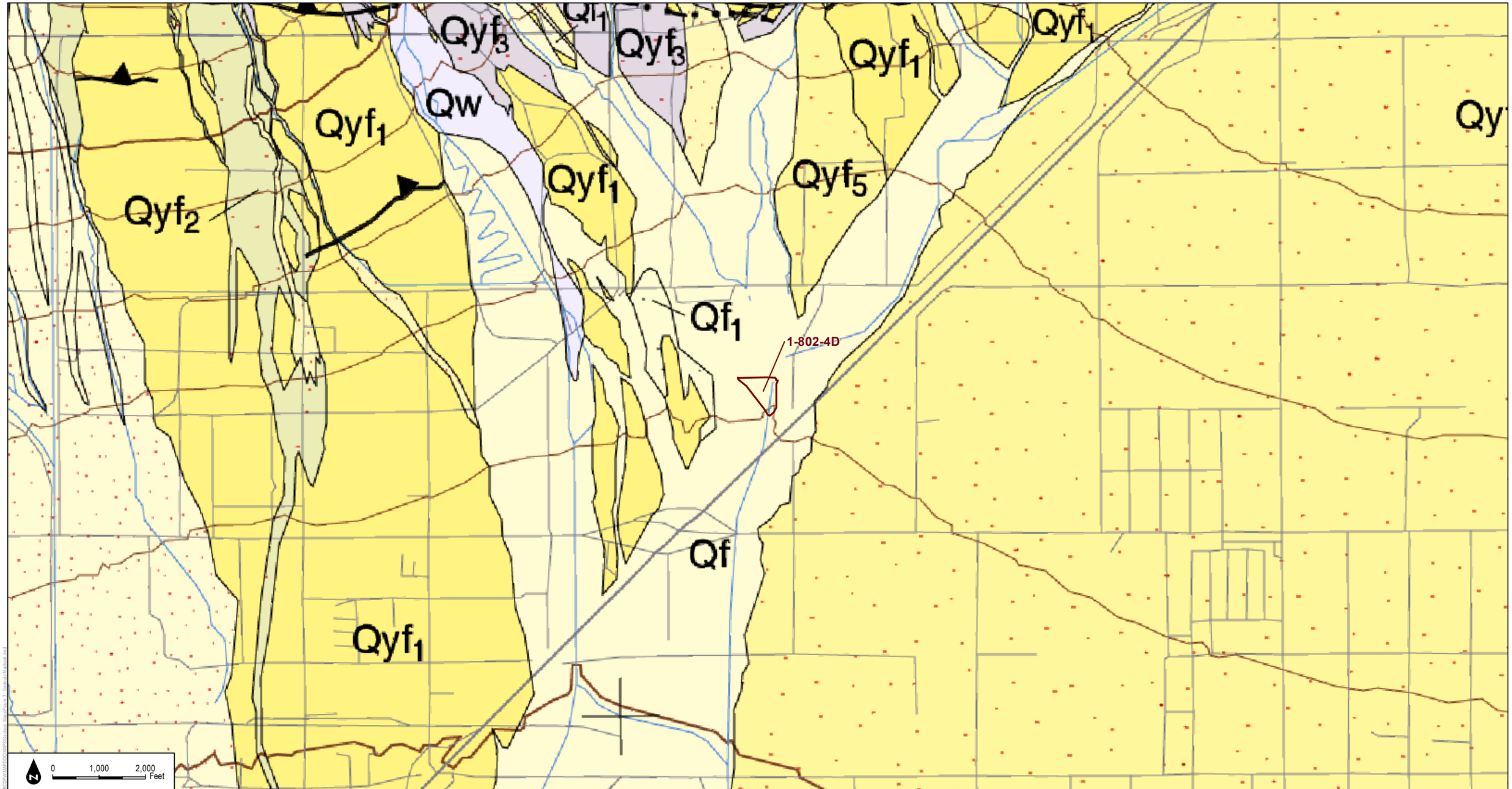
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

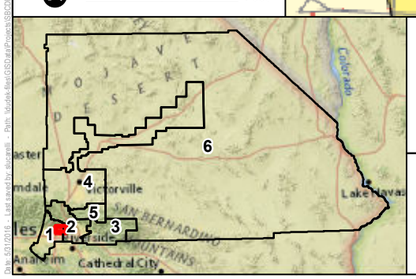
MAP 57

Zone 1 - San Sevaine Basin #3

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

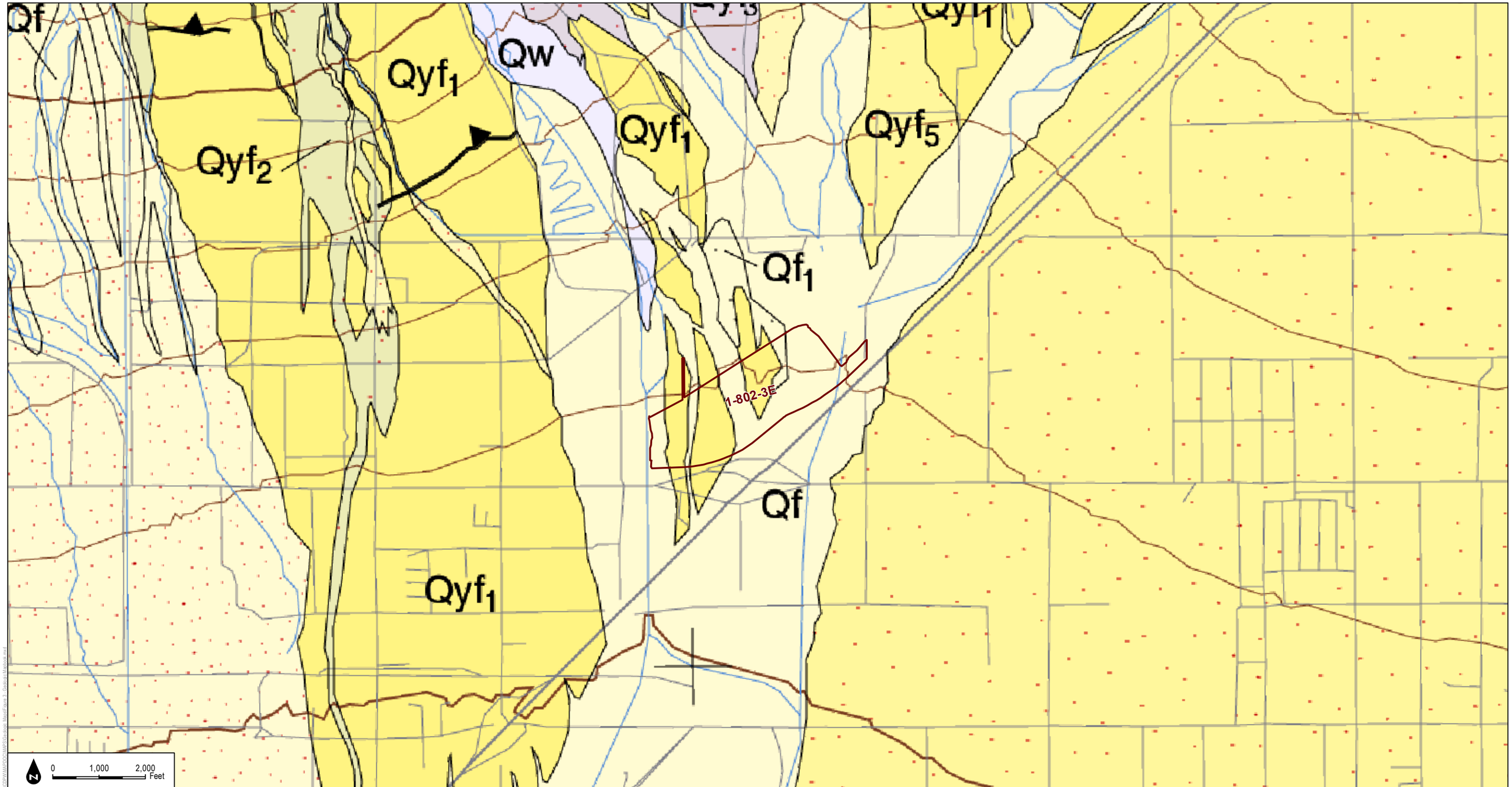
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

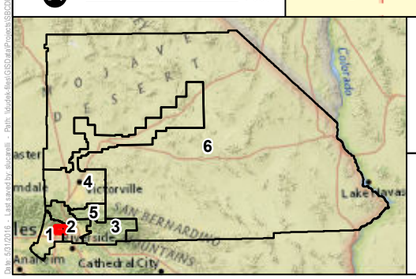
MAP 58

Zone 1 - San Sevaine Basin #4

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 59

Zone 1 - San Sevaine Basin #5 (DSOD)

San Bernardino Department of Public Works

Geologic Map

Tcd

Pgu

Qf1

Qyf3

Qyf3

Qyf1

Qyf1

Qw

Qyf1

Qyf

1-802-2A

Qyf5

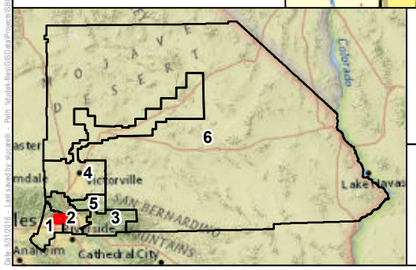
Qyf1

Qyf2

Qf1

Qf

0 1,000 2,000 Feet



Redbook Polygons

1:24,000

DUDEK

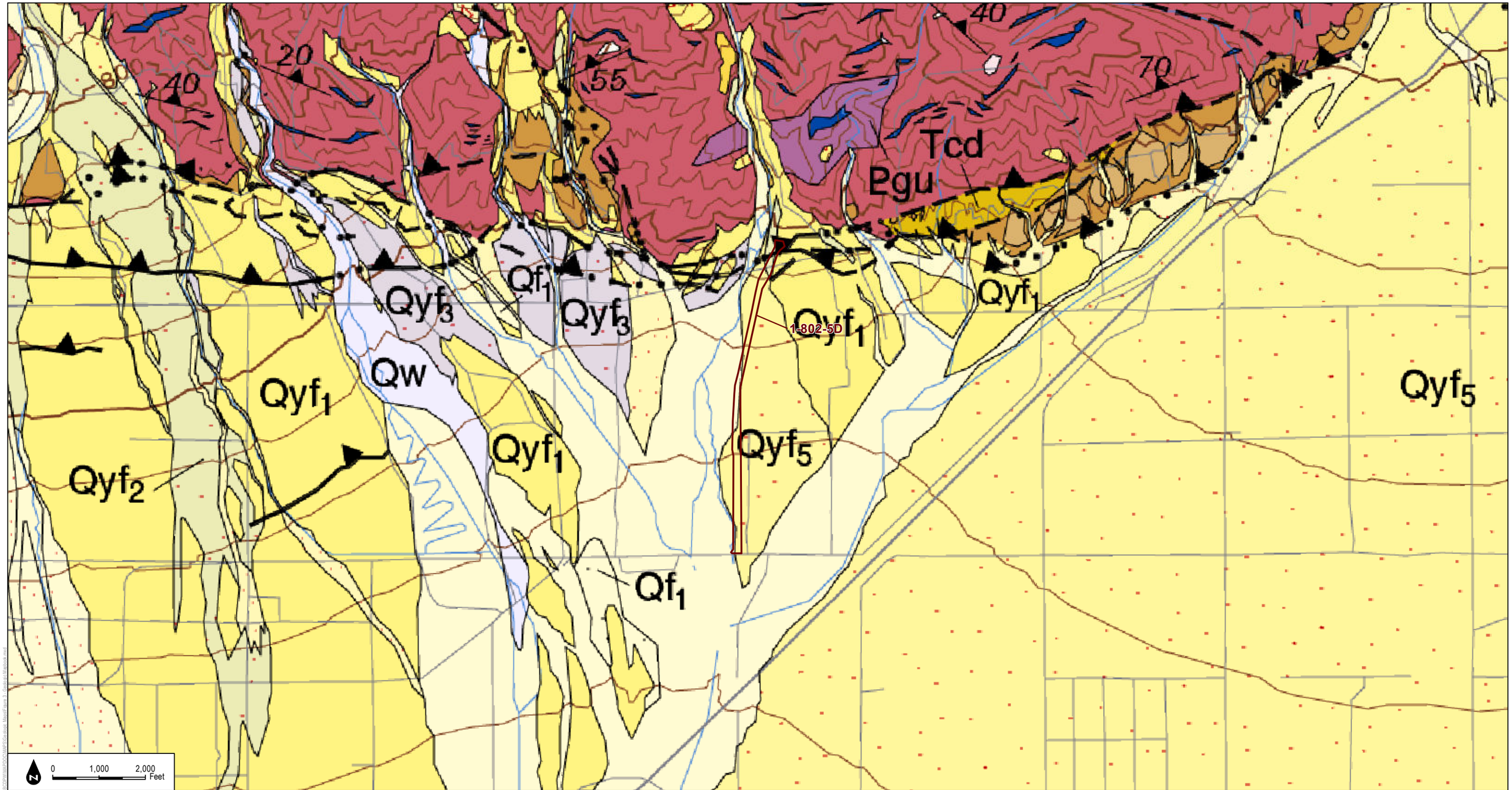
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

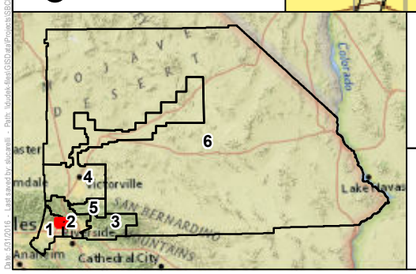
MAP 60

Zone 1 - San Sevaine Sprdg Grnds

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

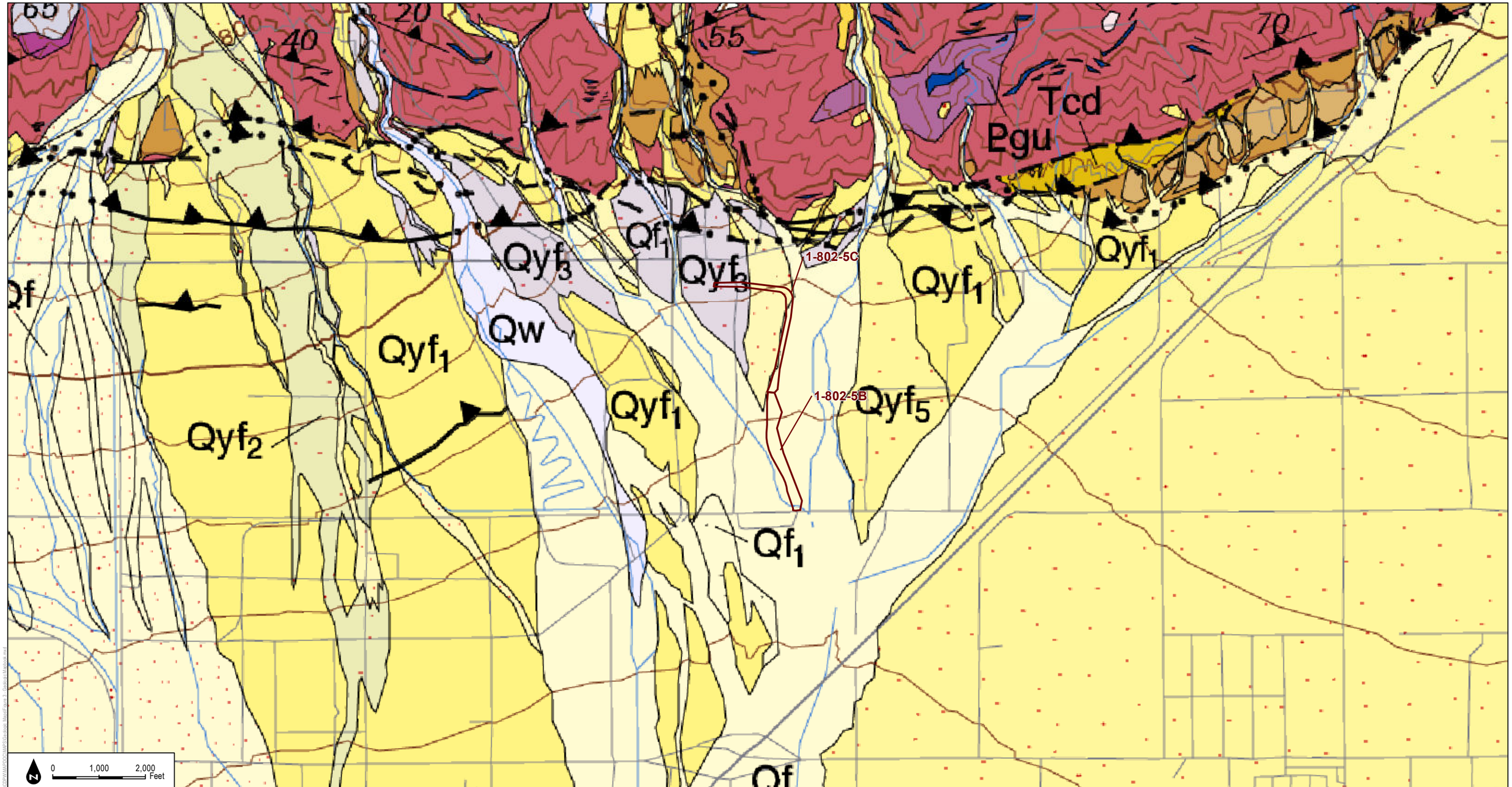
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

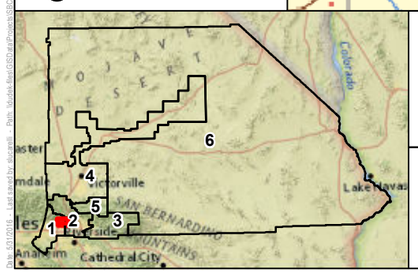
MAP 61

Zone 1 - San Sevaine Sprdg Grnds - East Levee

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

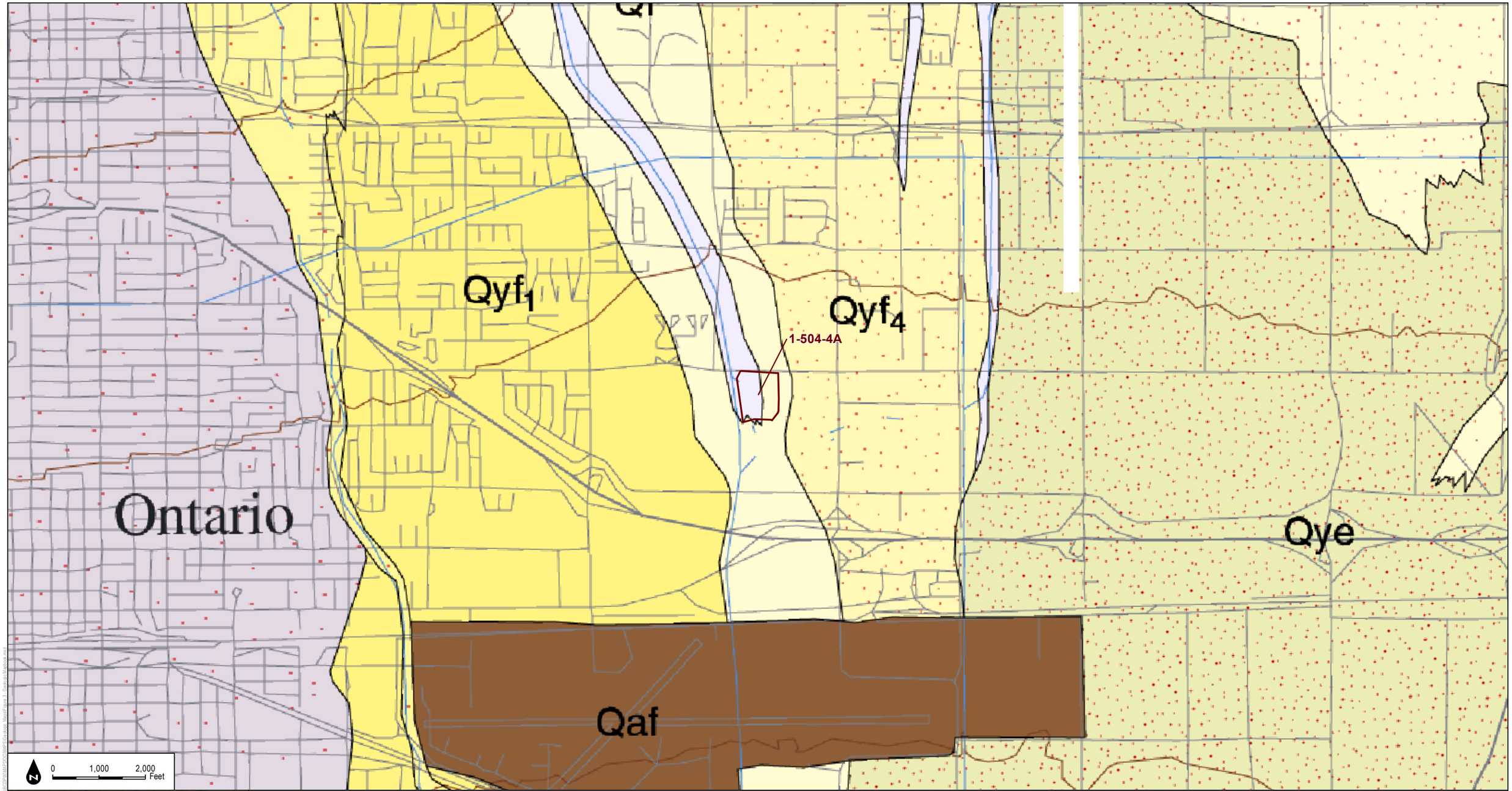
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

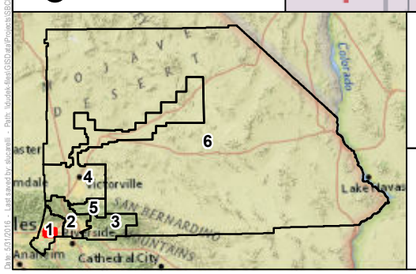
MAP 62

Zone 1 - San Sevaine Sprdg Grnds - West Levee

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 63

Zone 1 - Turner Basin #1

San Bernardino Department of Public Works

Geologic Map

Qyf1

Qyf4

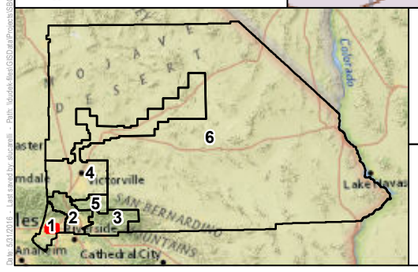
1-504-4B

Ontario

Qye

Qaf

0 1,000 2,000 Feet



Redbook Polygons

1:24,000

DUDEK

SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

MAP 64

Zone 1 - Turner Basin #2

San Bernardino Department of Public Works

Geologic Map

Qyf1

Qyf4

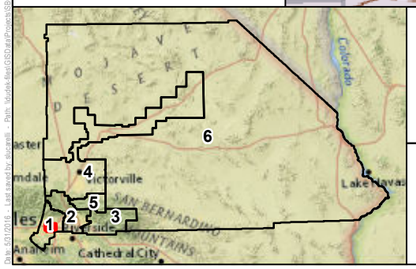
1-504-4C

Ontario

Qye

Qaf

0 1,000 2,000 Feet



Redbook Polygons

1:24,000

DUDEK

SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 65

Zone 1 - Turner Basin #3

San Bernardino Department of Public Works

Geologic Map

Qyf1

Qyf4

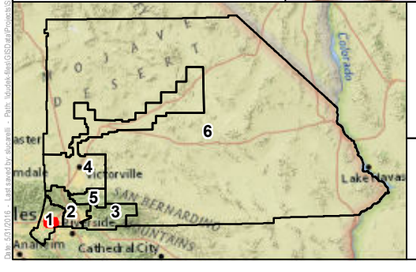
1-504-4D

Ontario

Qye

Qaf

0 1,000 2,000 Feet



Redbook Polygons

1:24,000

DUDEK

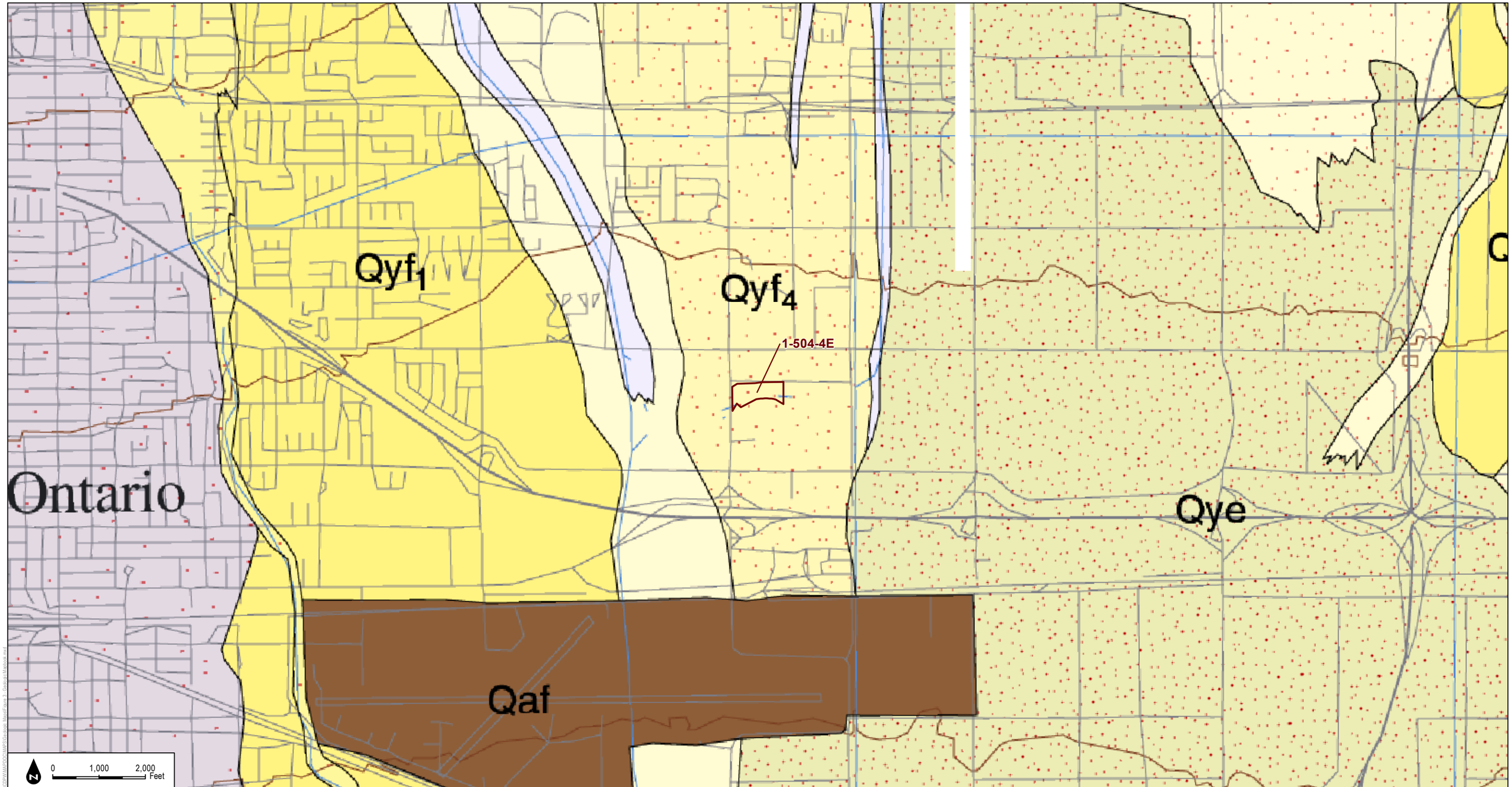
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

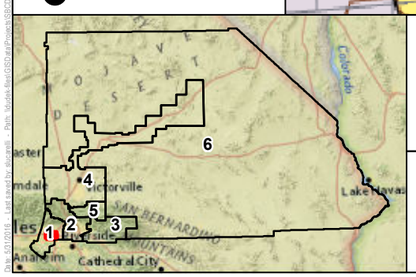
MAP 66

Zone 1 - Turner Basin #4

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

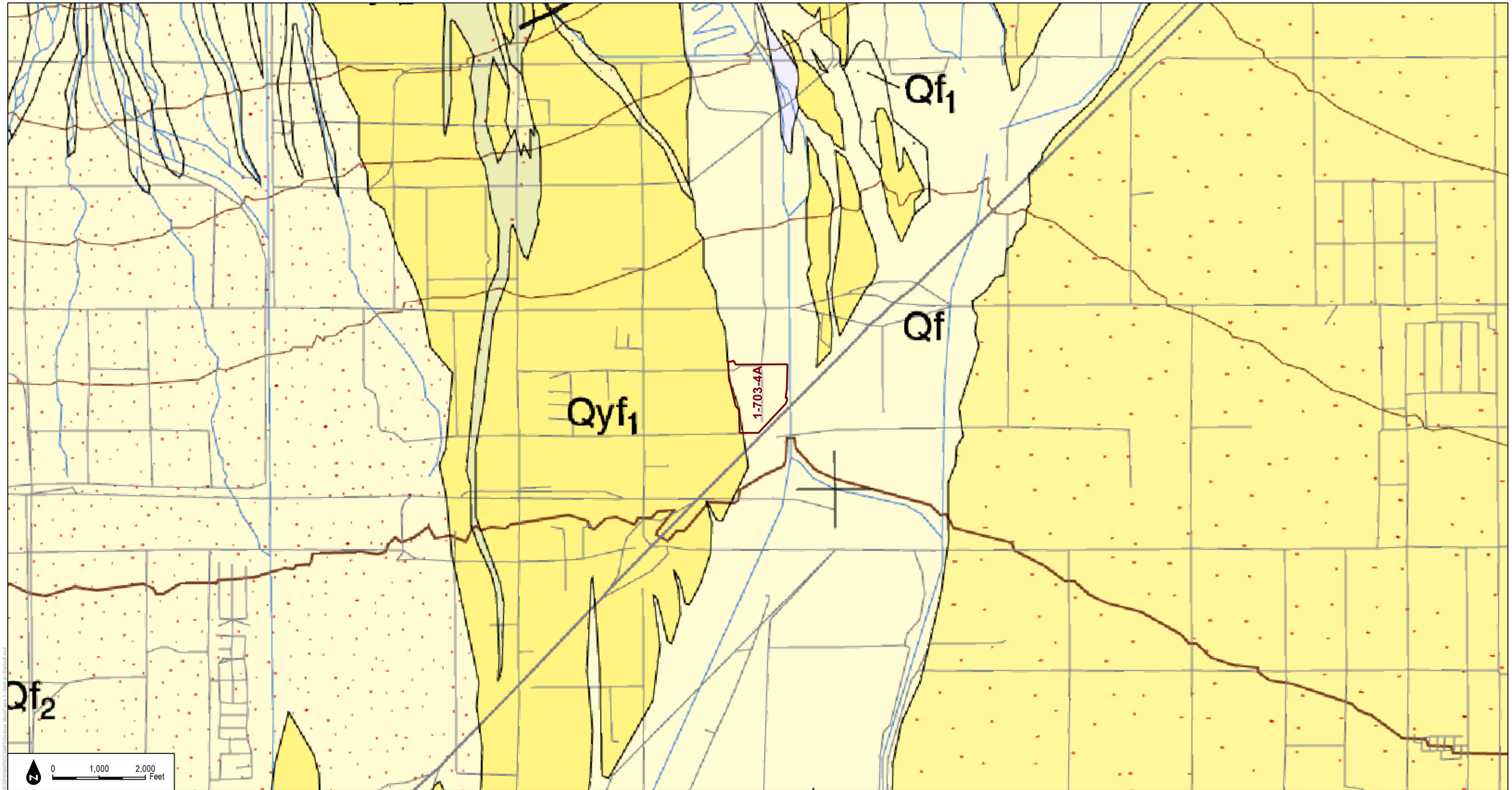
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

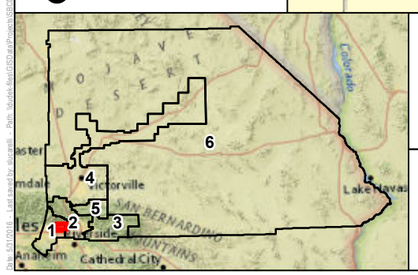
MAP 67

Zone 1 - Turner Basin #5

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

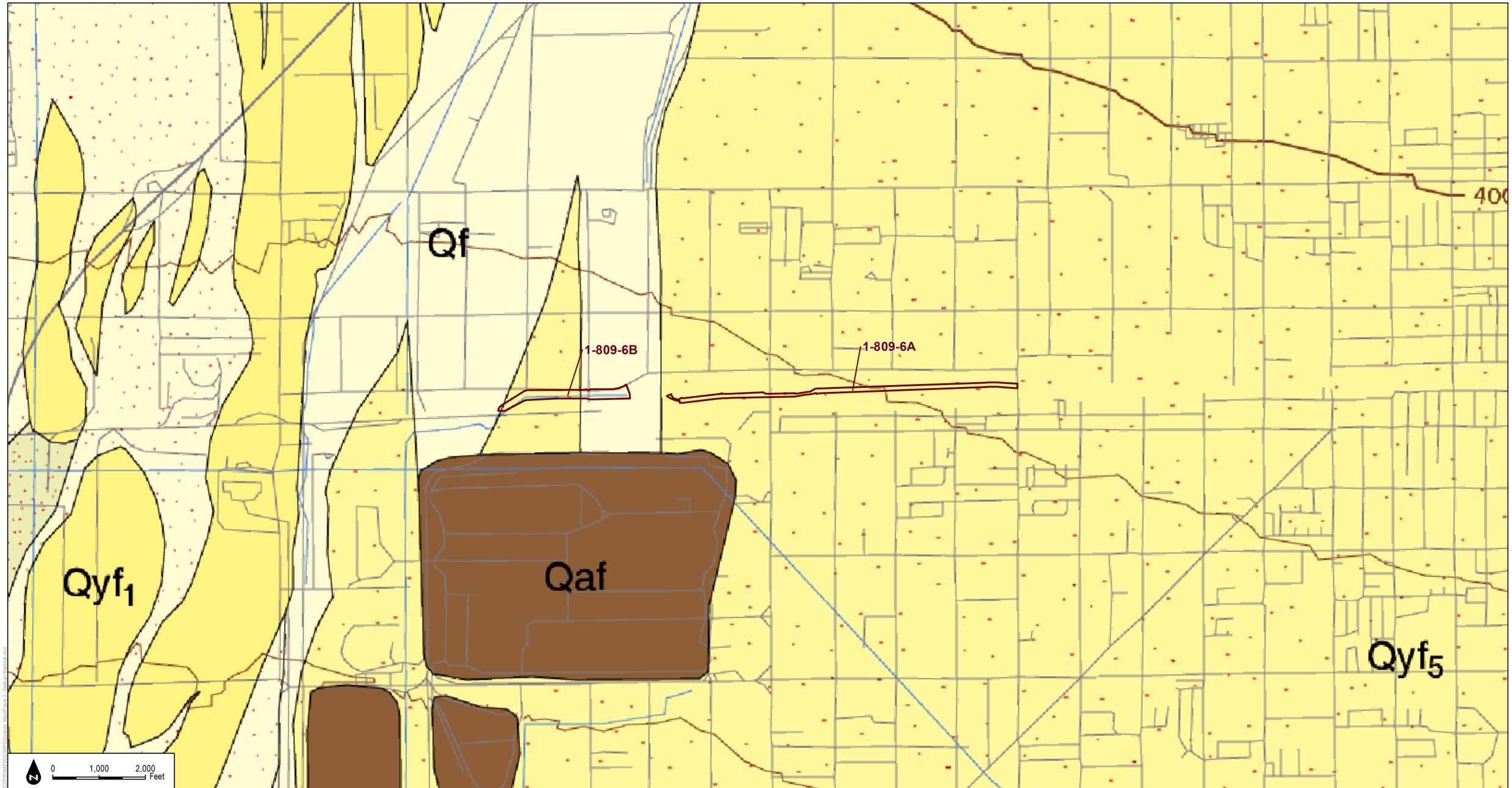
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

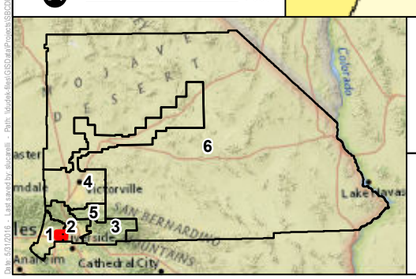
MAP 68

Zone 1 - Victorian Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

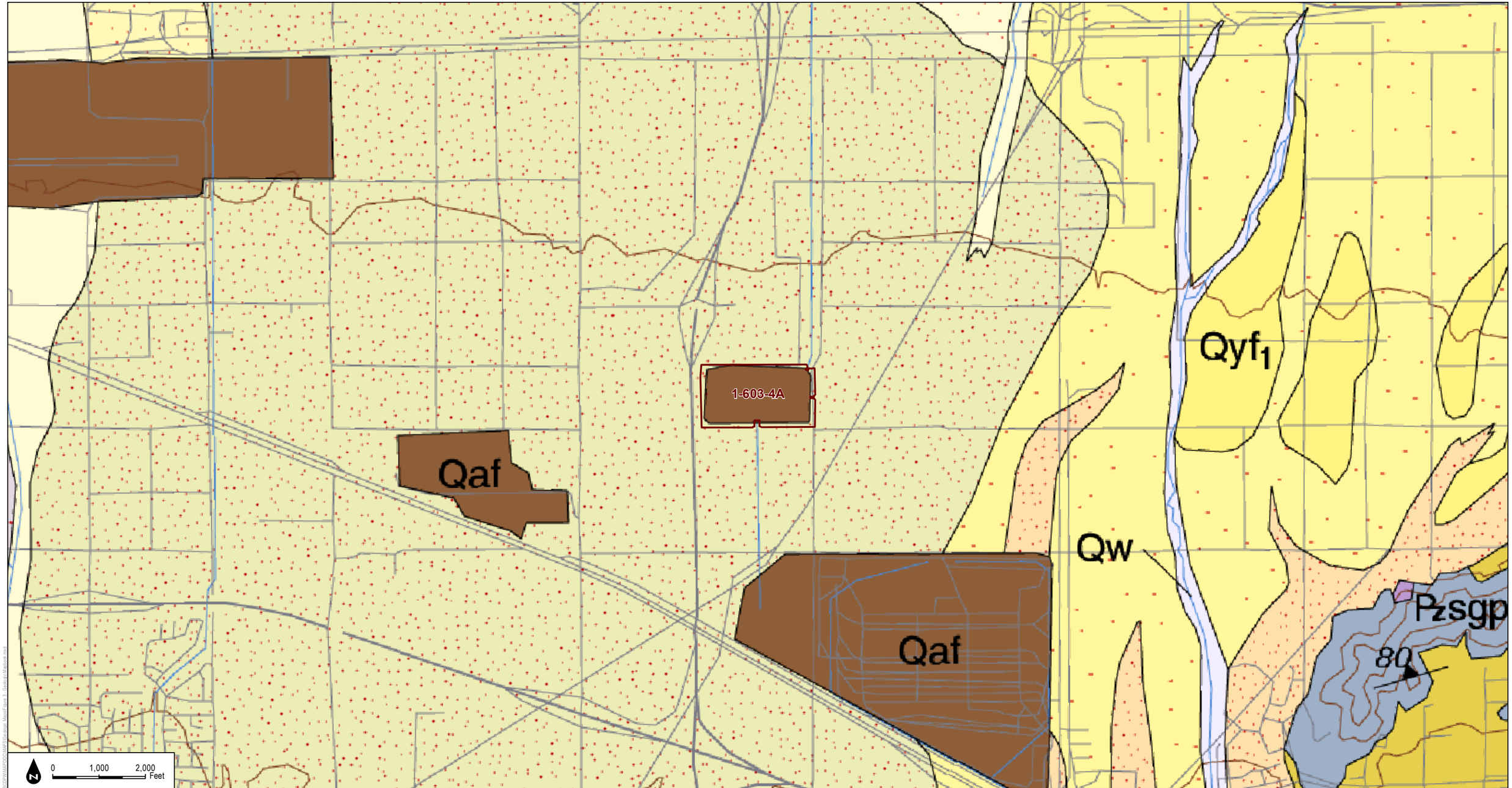
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

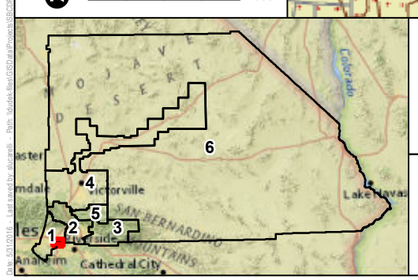
MAP 69

Zone 1 - West Fontana Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

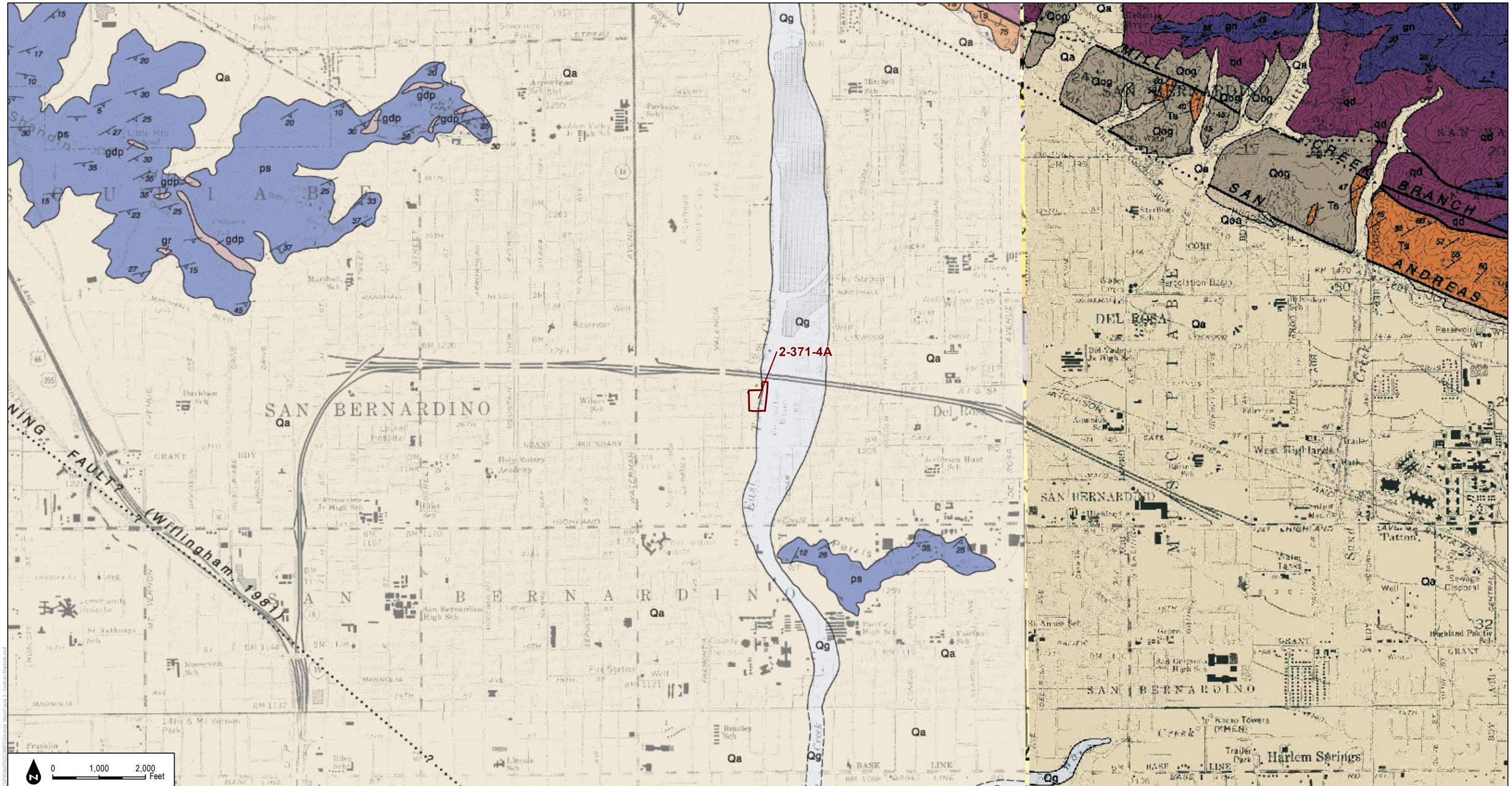
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

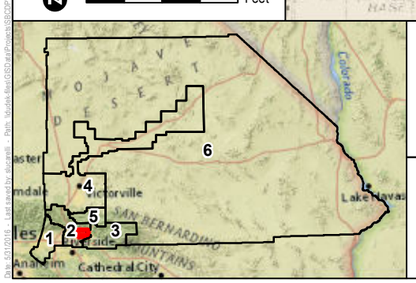
MAP 70

Zone 1 - Wineville Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

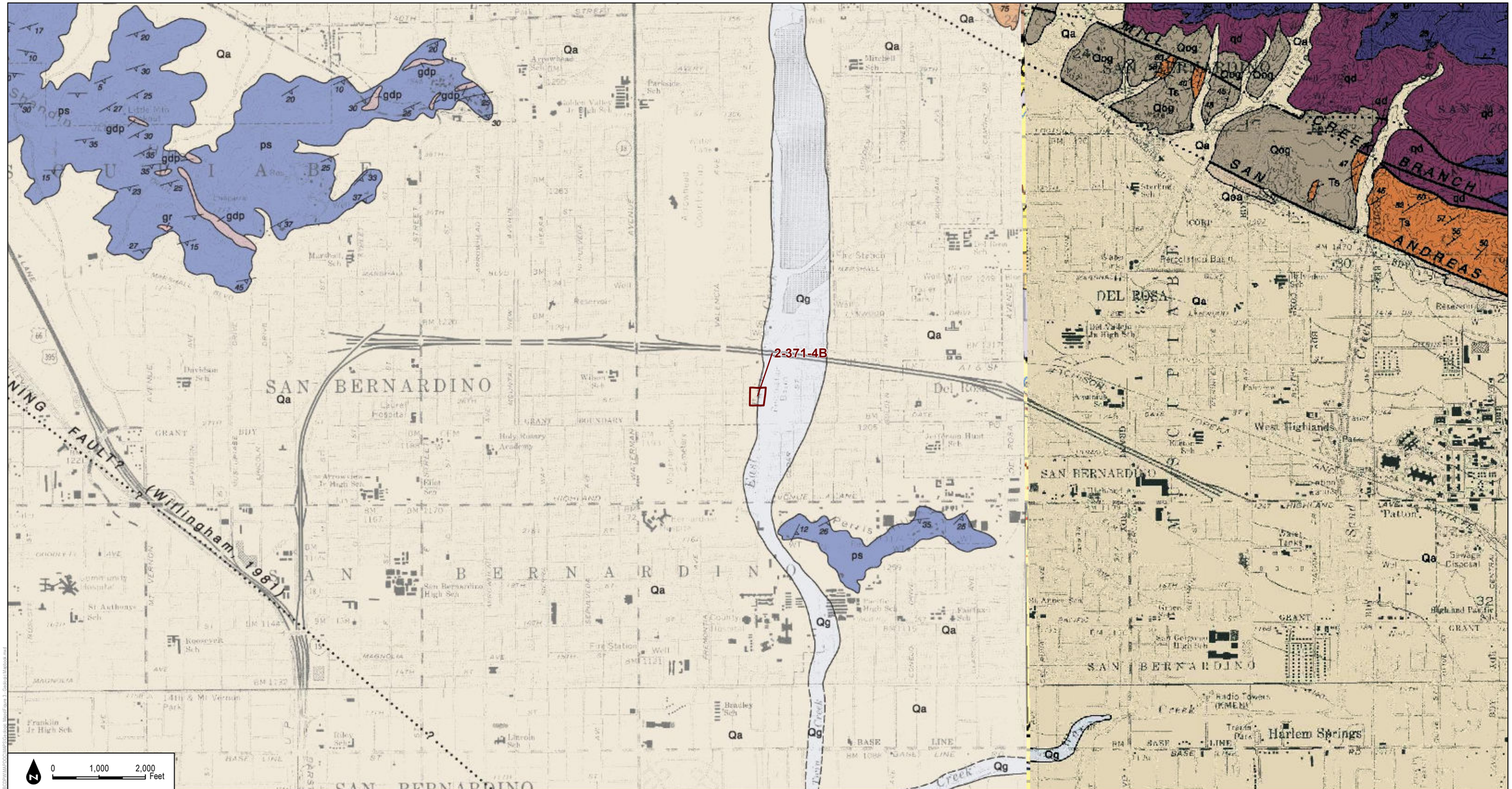
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

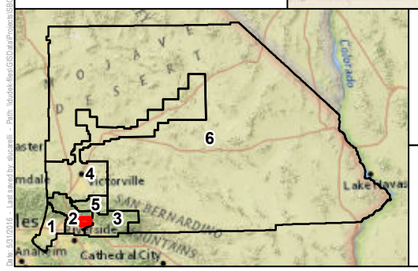
MAP 71

Zone 2 - 29th Street Basin #1

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

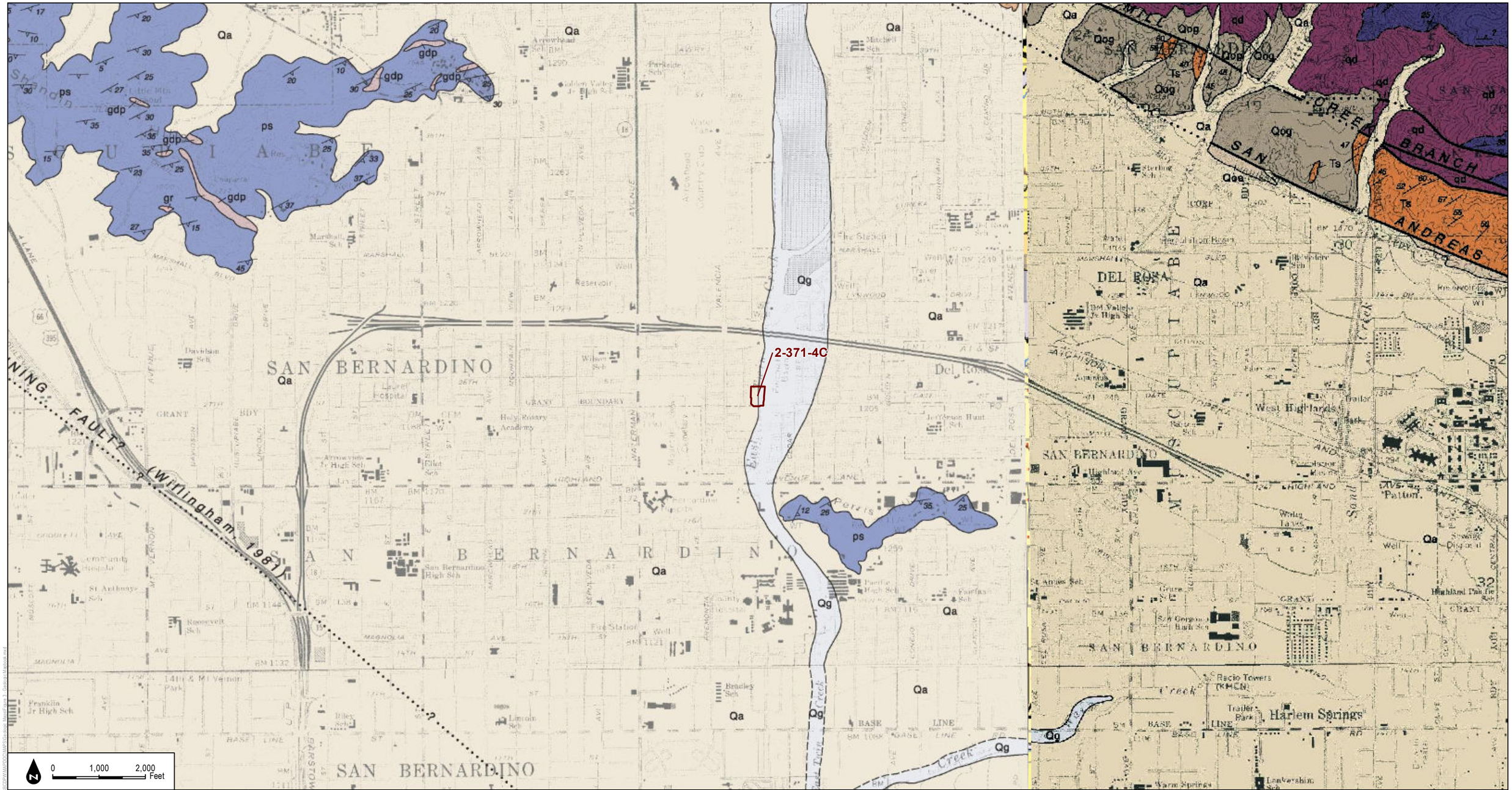
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

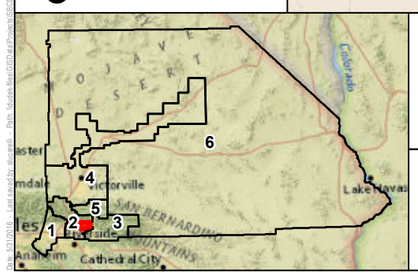
MAP 72

Zone 2 - 29th Street Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

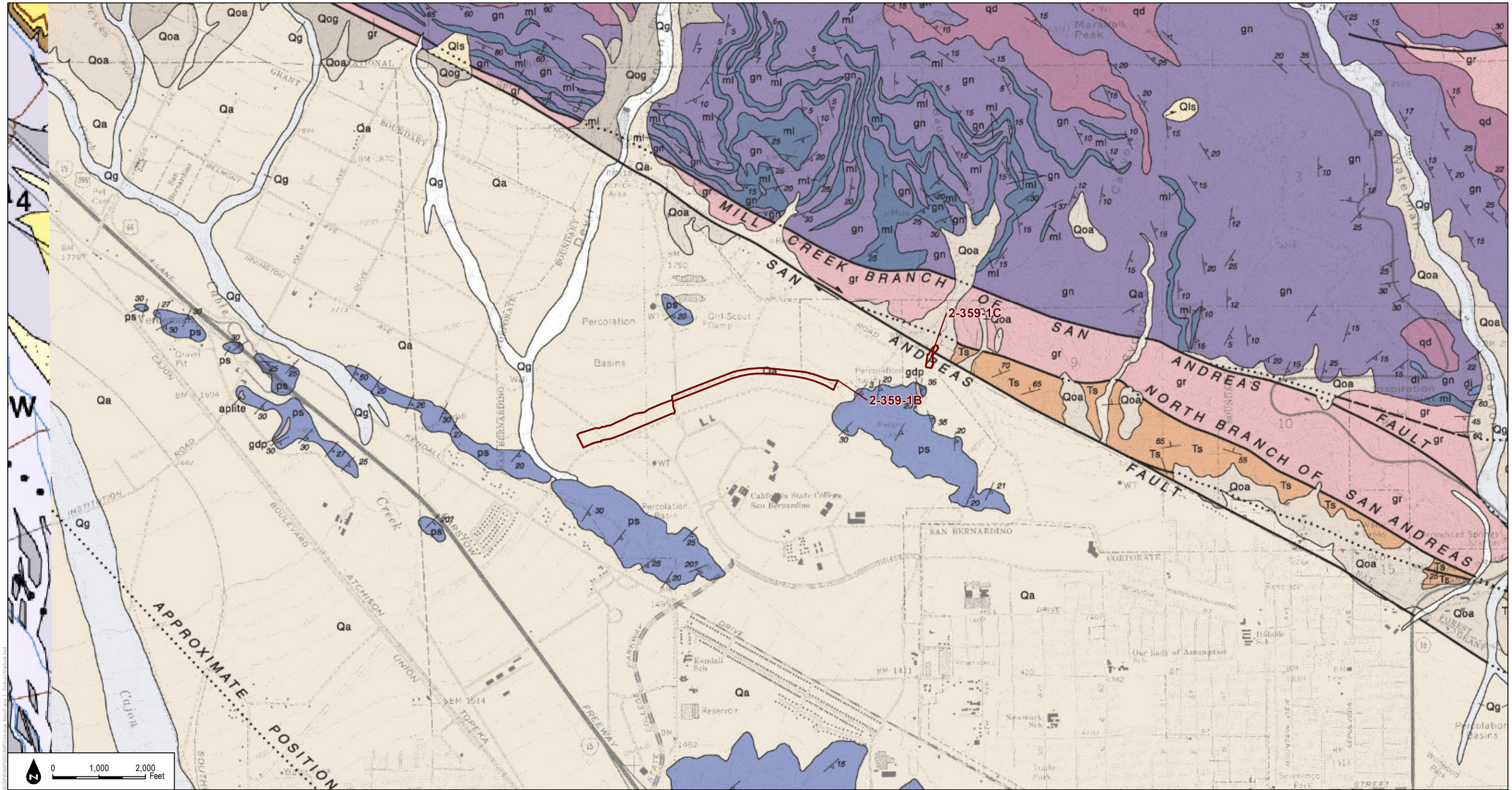
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

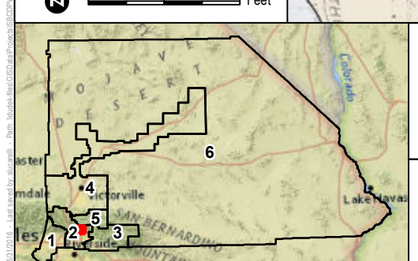
MAP 73

Zone 2 - 29th Street Basin #3

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

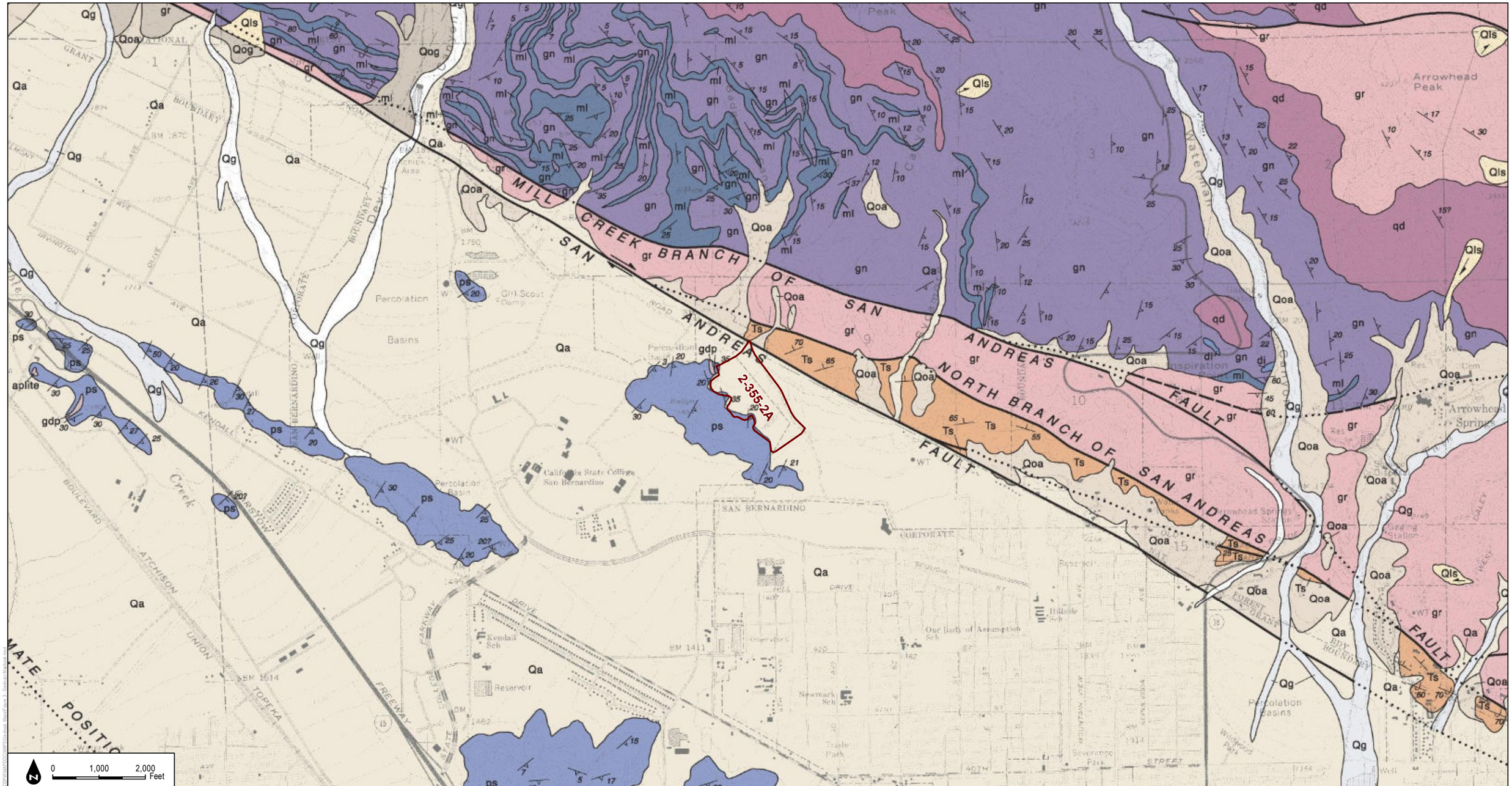
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

San Bernardino Department of Public Works

MAP 74

Zone 2 - Badger Channel

Geologic Map



Redbook Polygons

1:24,000

DUDEK

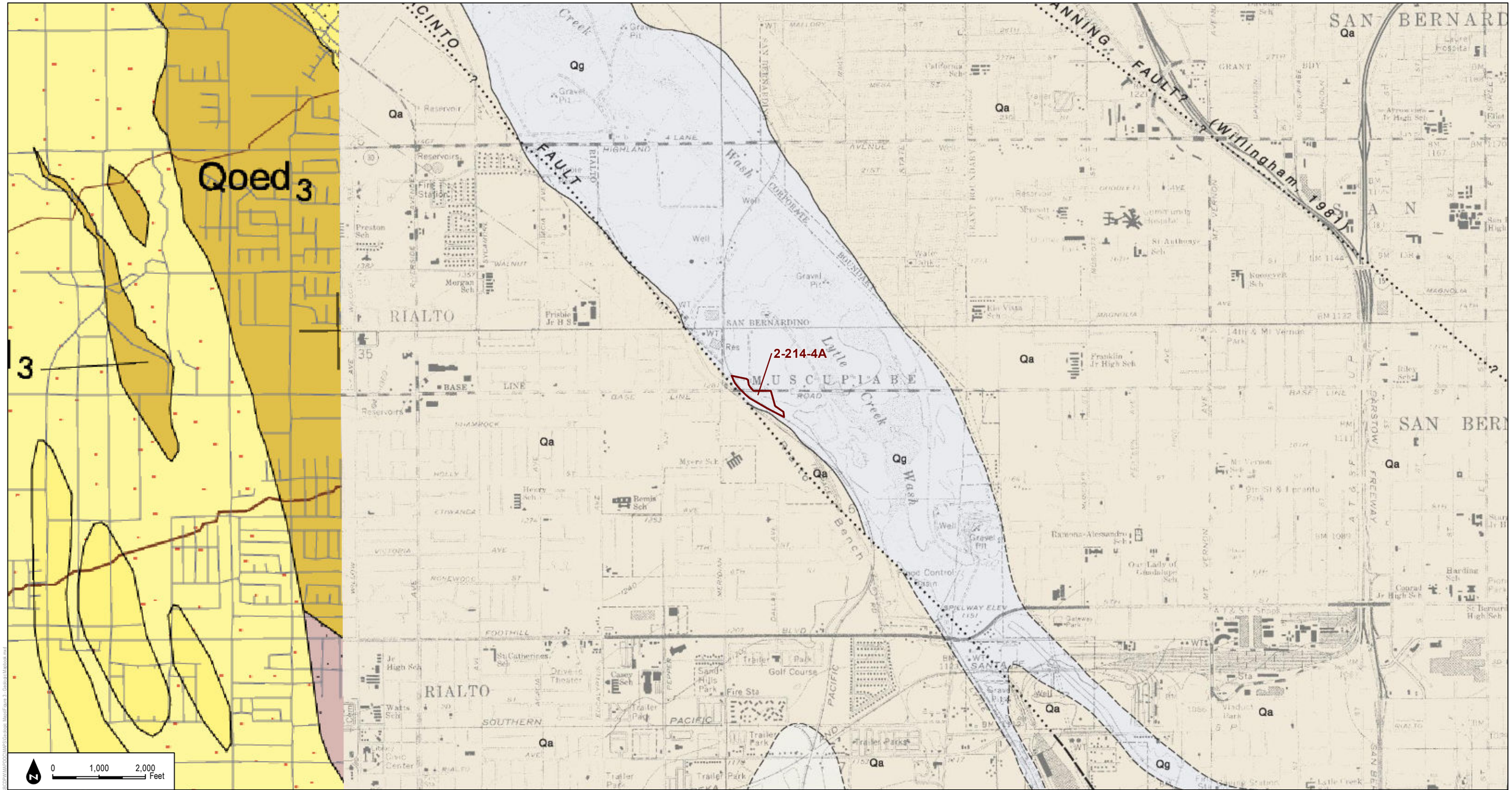
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

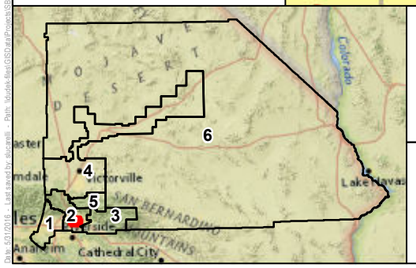
MAP 75

Zone 2 - Badger Sprdg Grnds-Upper

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

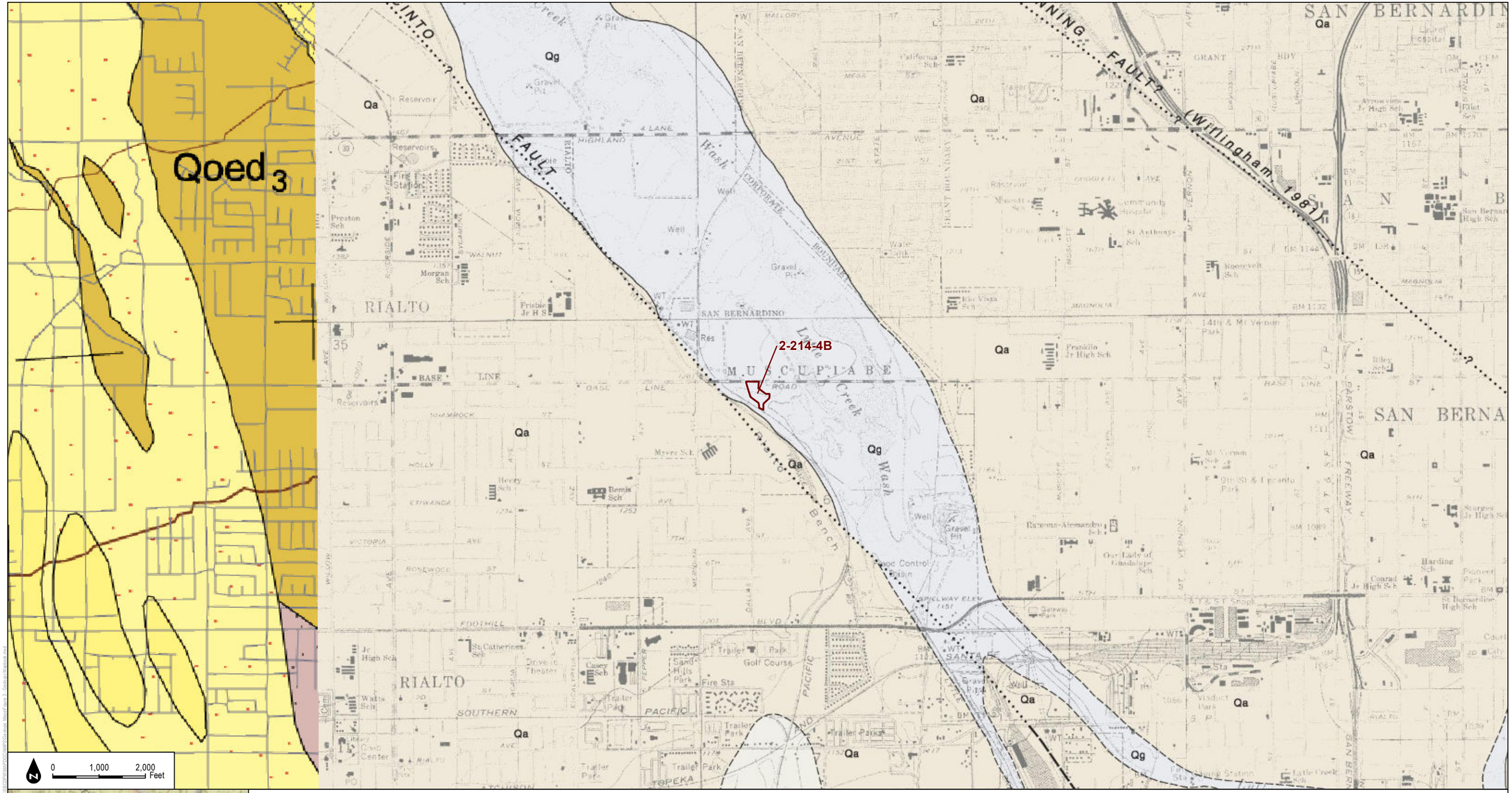
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

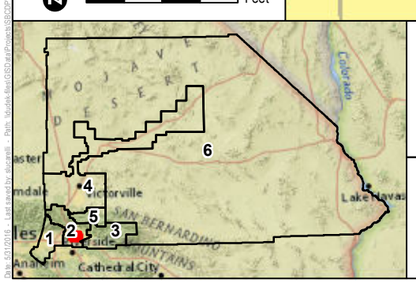
MAP 76

Zone 2 - Baseline Basin #1

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

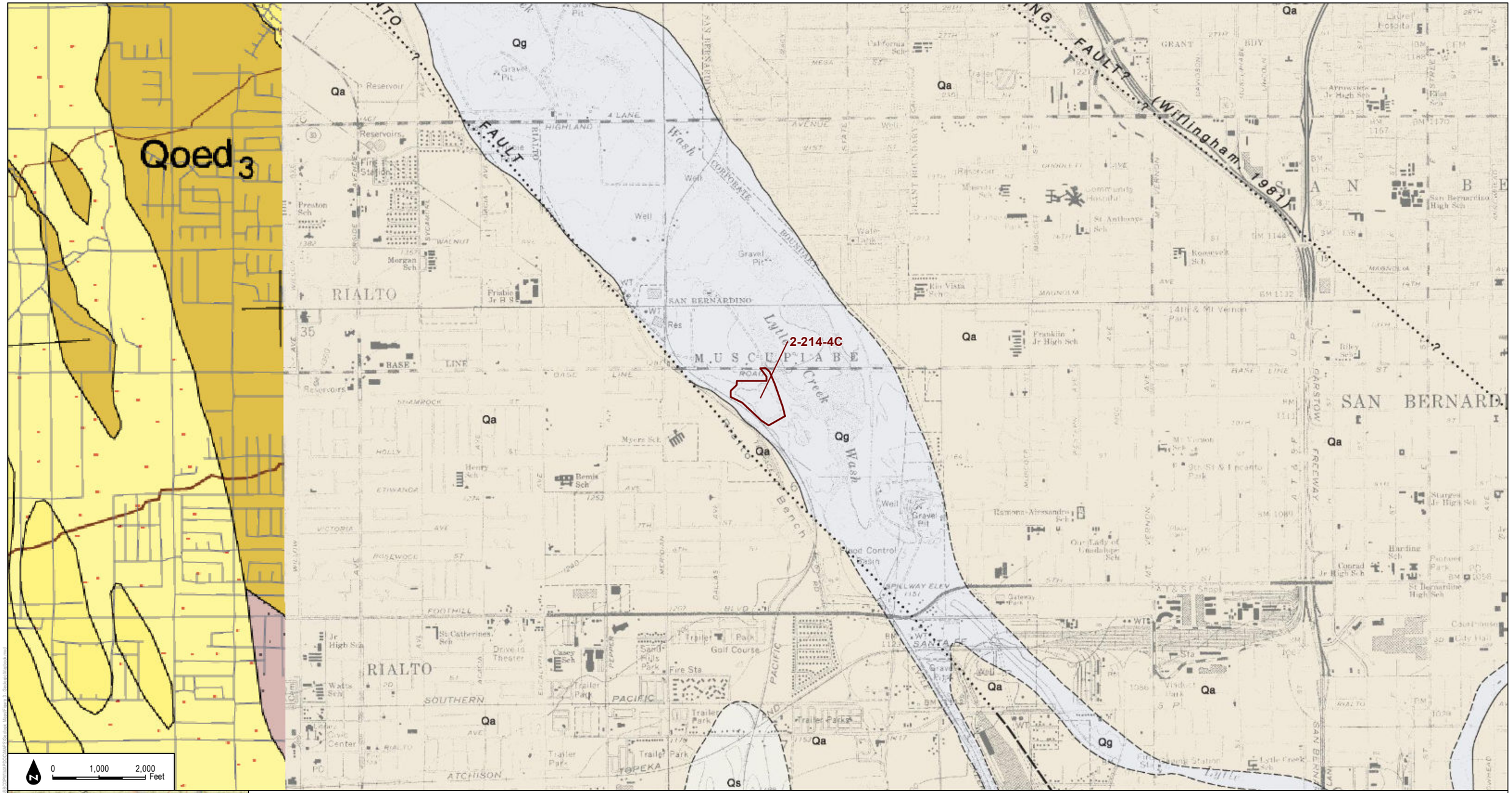
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

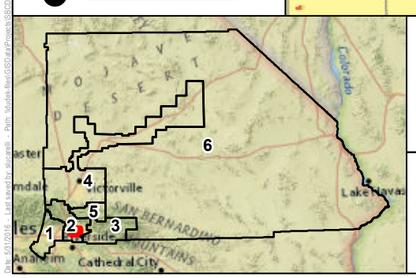
MAP 77

Zone 2 - Baseline Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

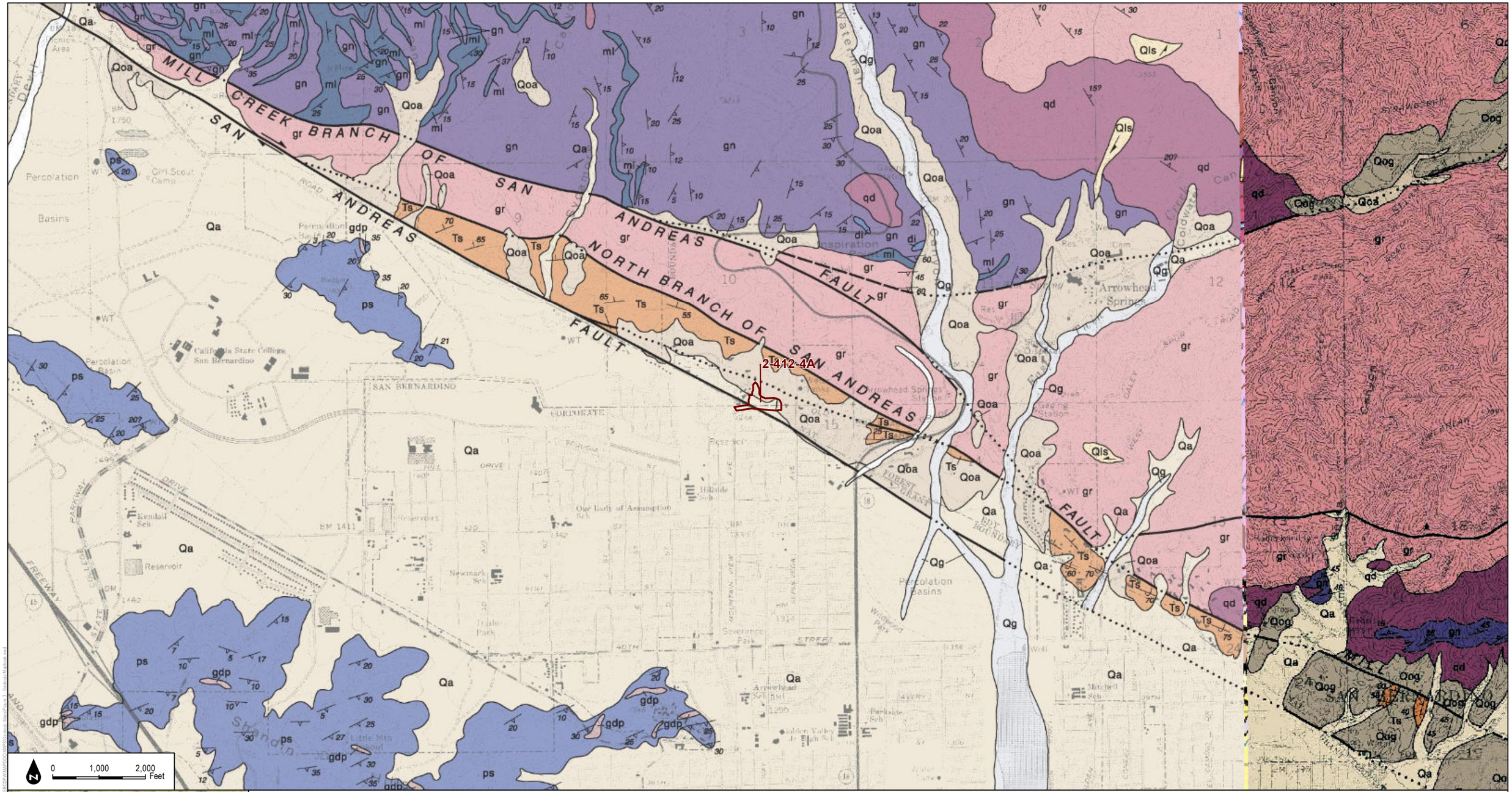
SOURCE: San Bernardino County Flood Control District, Dibblee / California Geological Society

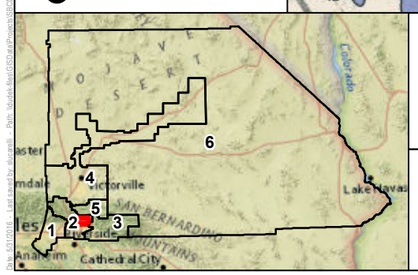
MAP 78

Zone 2 - Baseline Basin #3

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

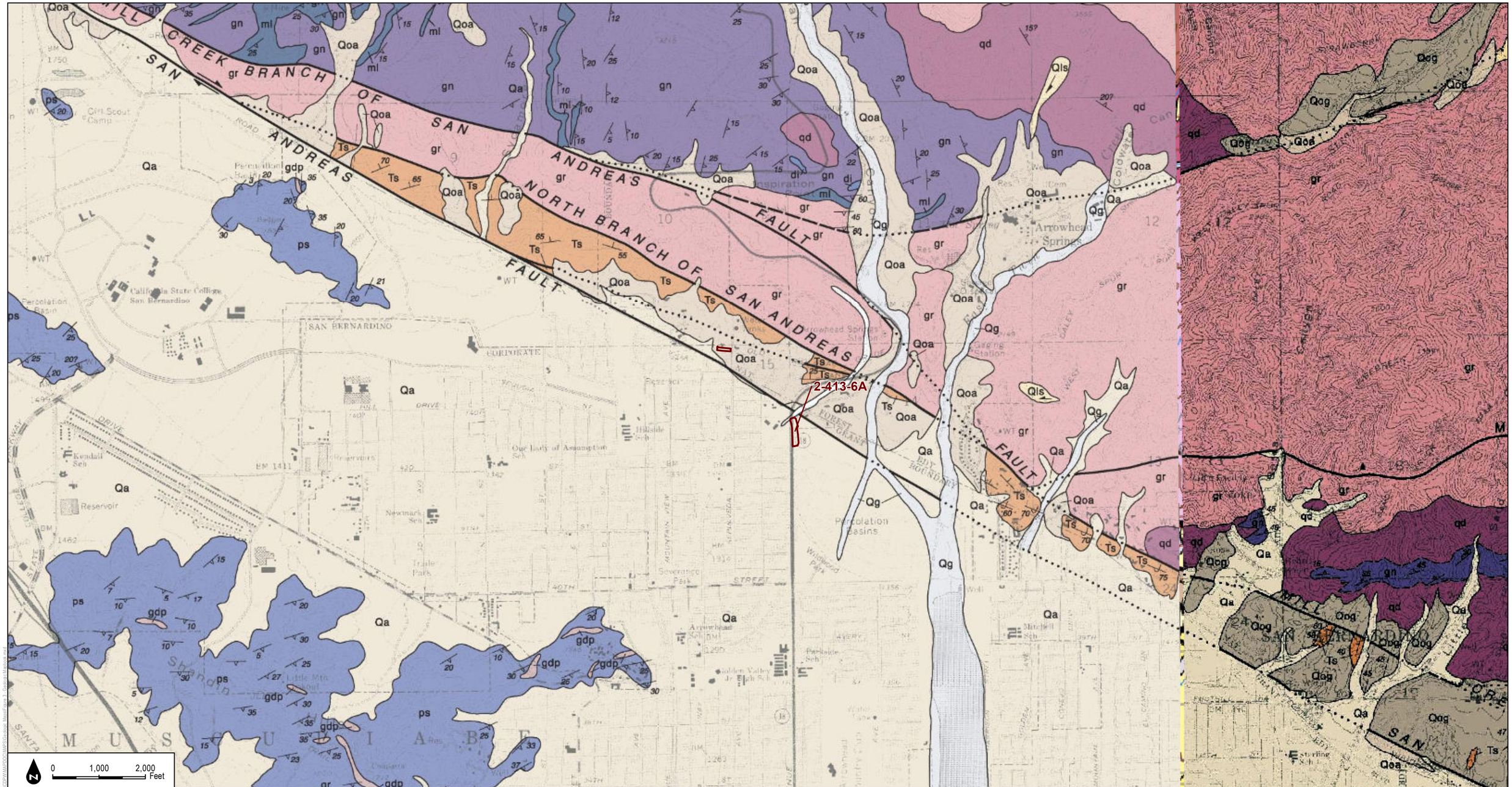
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

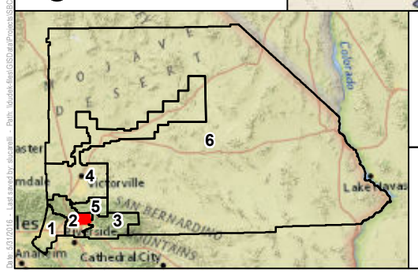
MAP 79

Zone 2 - Brush Canyon Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

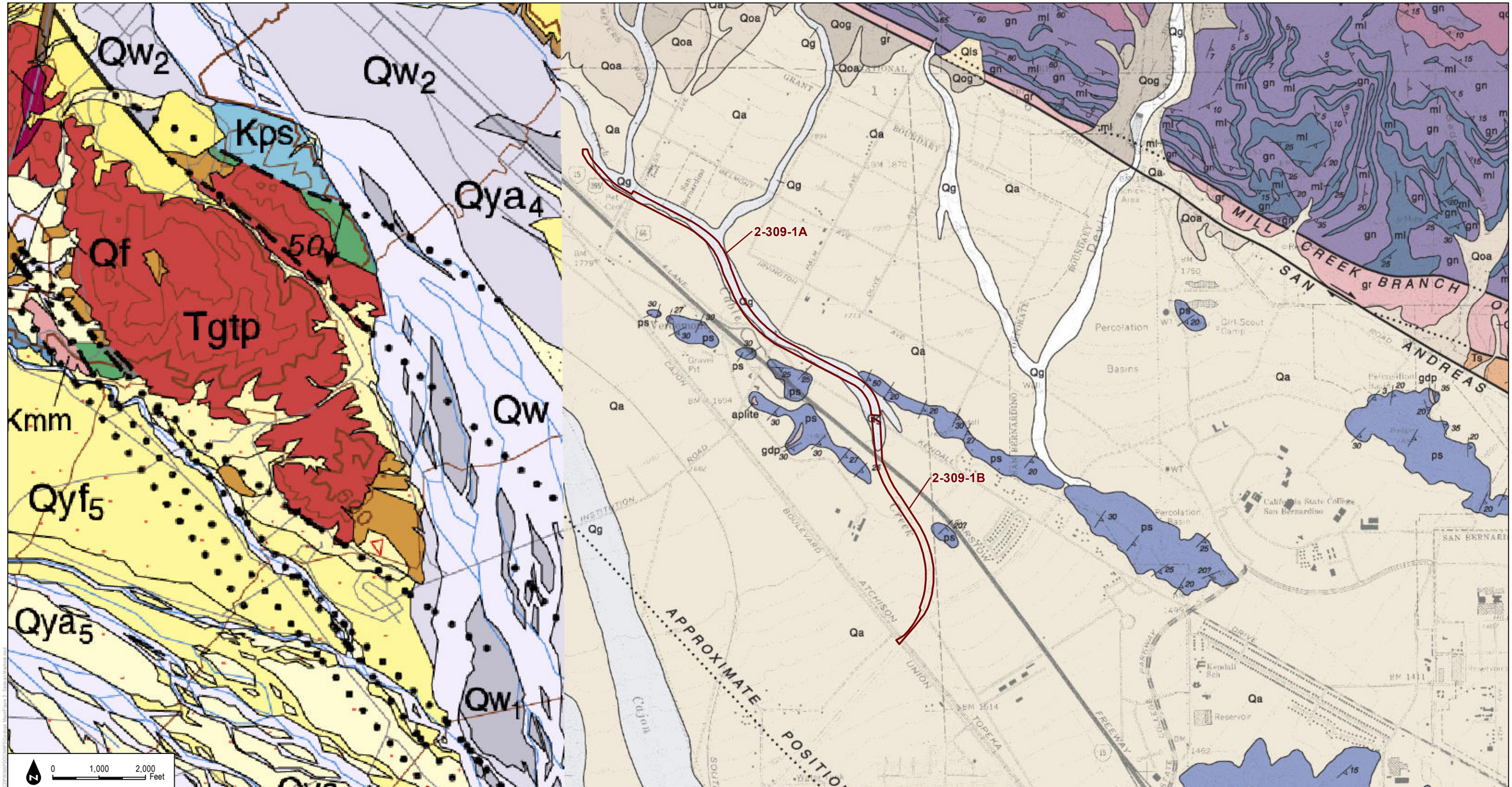
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

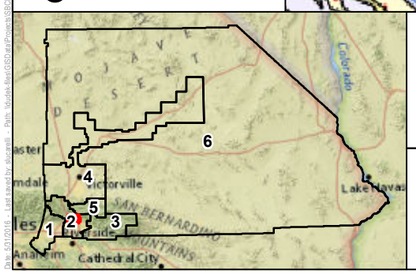
MAP 80

Zone 2 - Brush Canyon Storm Drain

San Bernardino Department of Public Works

Geologic Map





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DUDEK

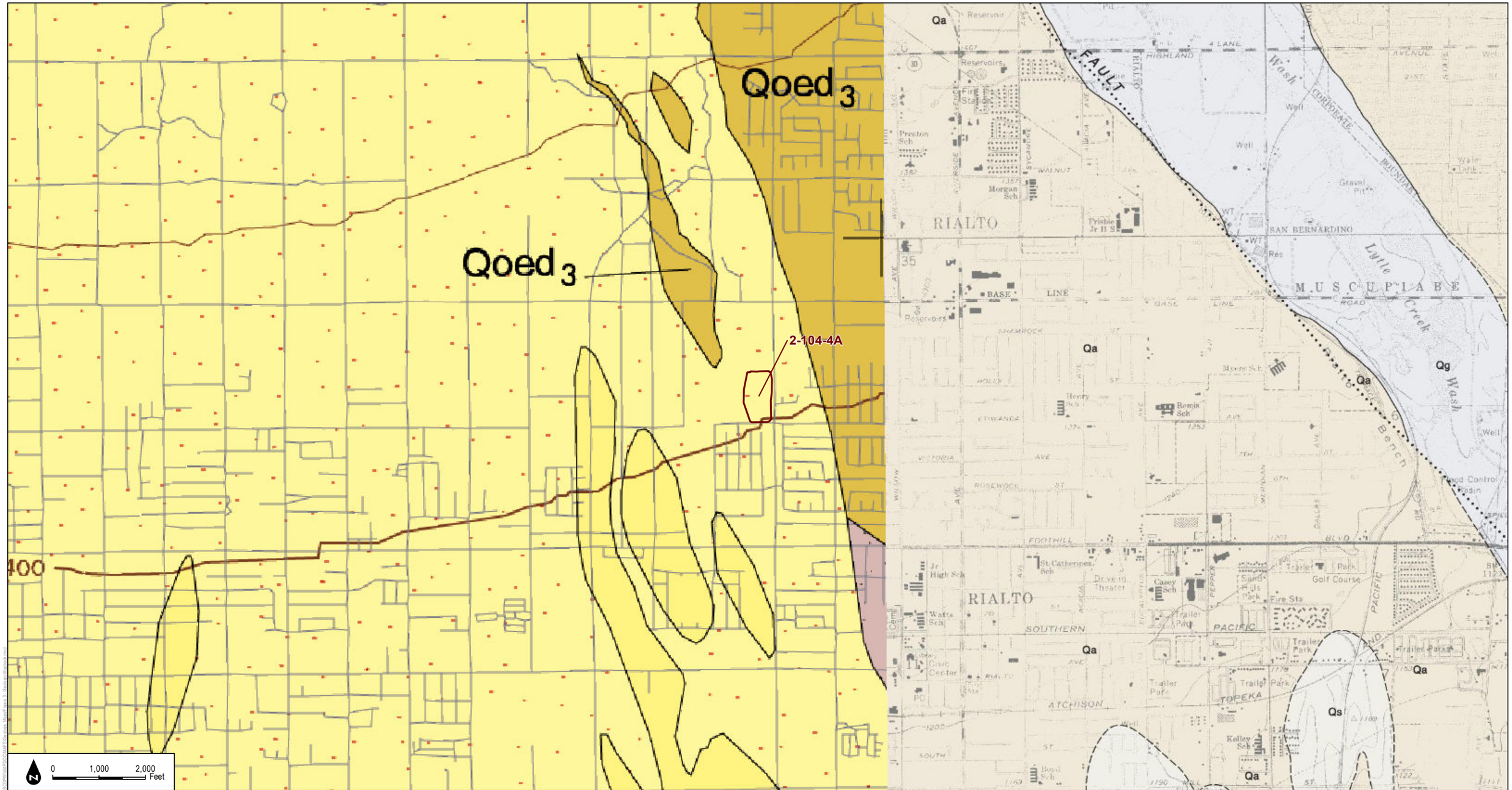
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 81

Zone 2 - Cable Creek Channel

San Bernardino Department of Public Works

Geologic Map



DUDEK

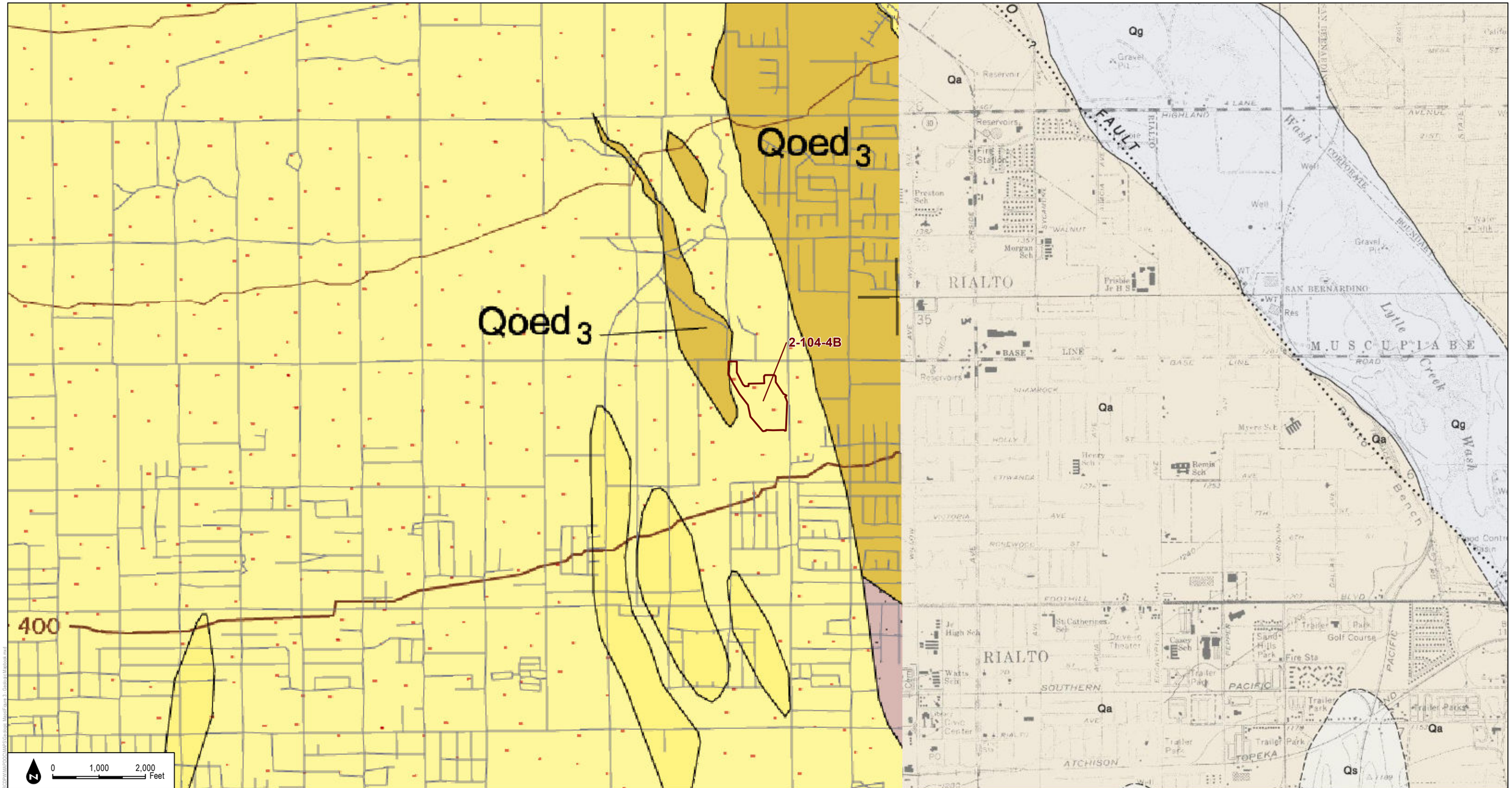
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

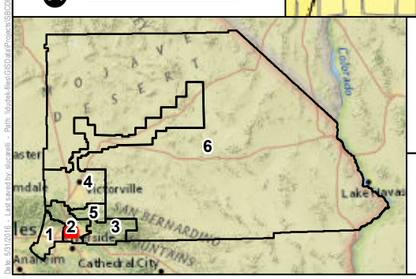
MAP 82

Zone 2 - Cactus Basin #1

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

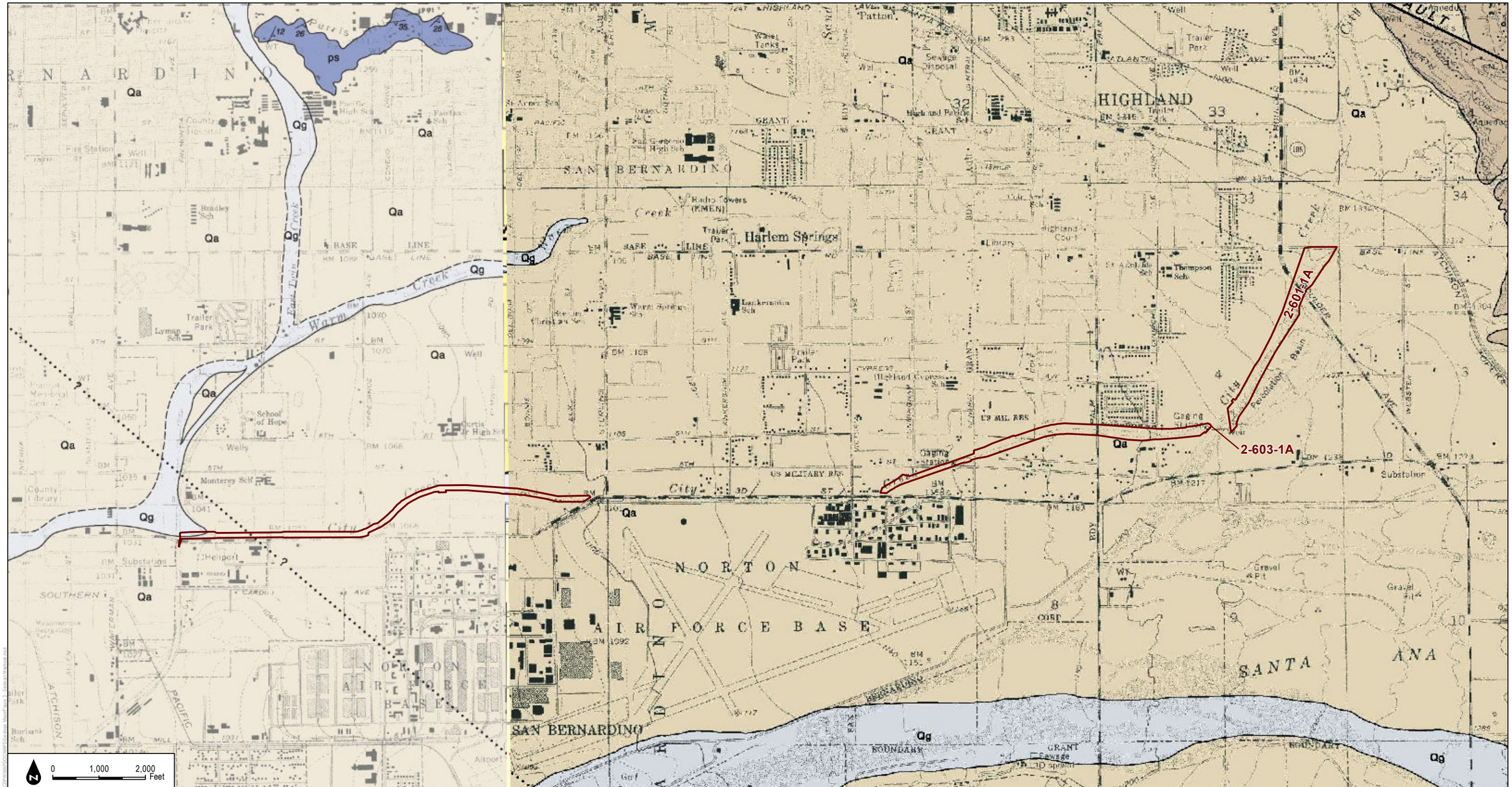
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

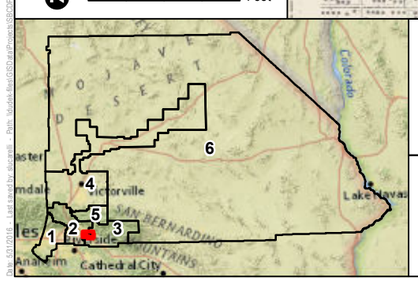
MAP 83

Zone 2 - Cactus Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

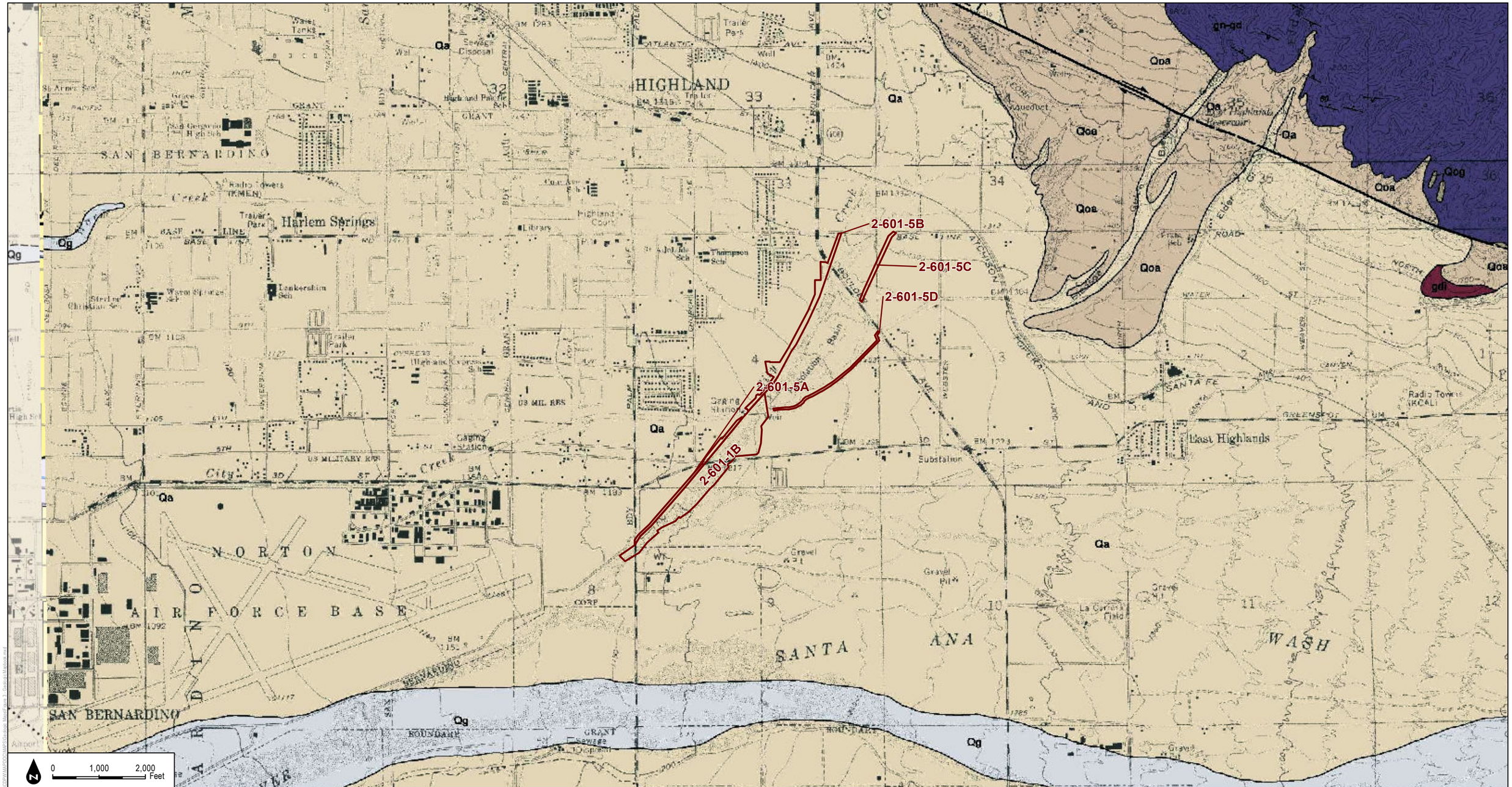
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

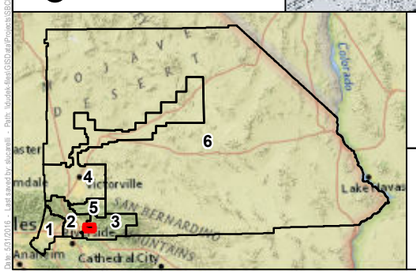
MAP 84

Zone 2 - City Creek Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

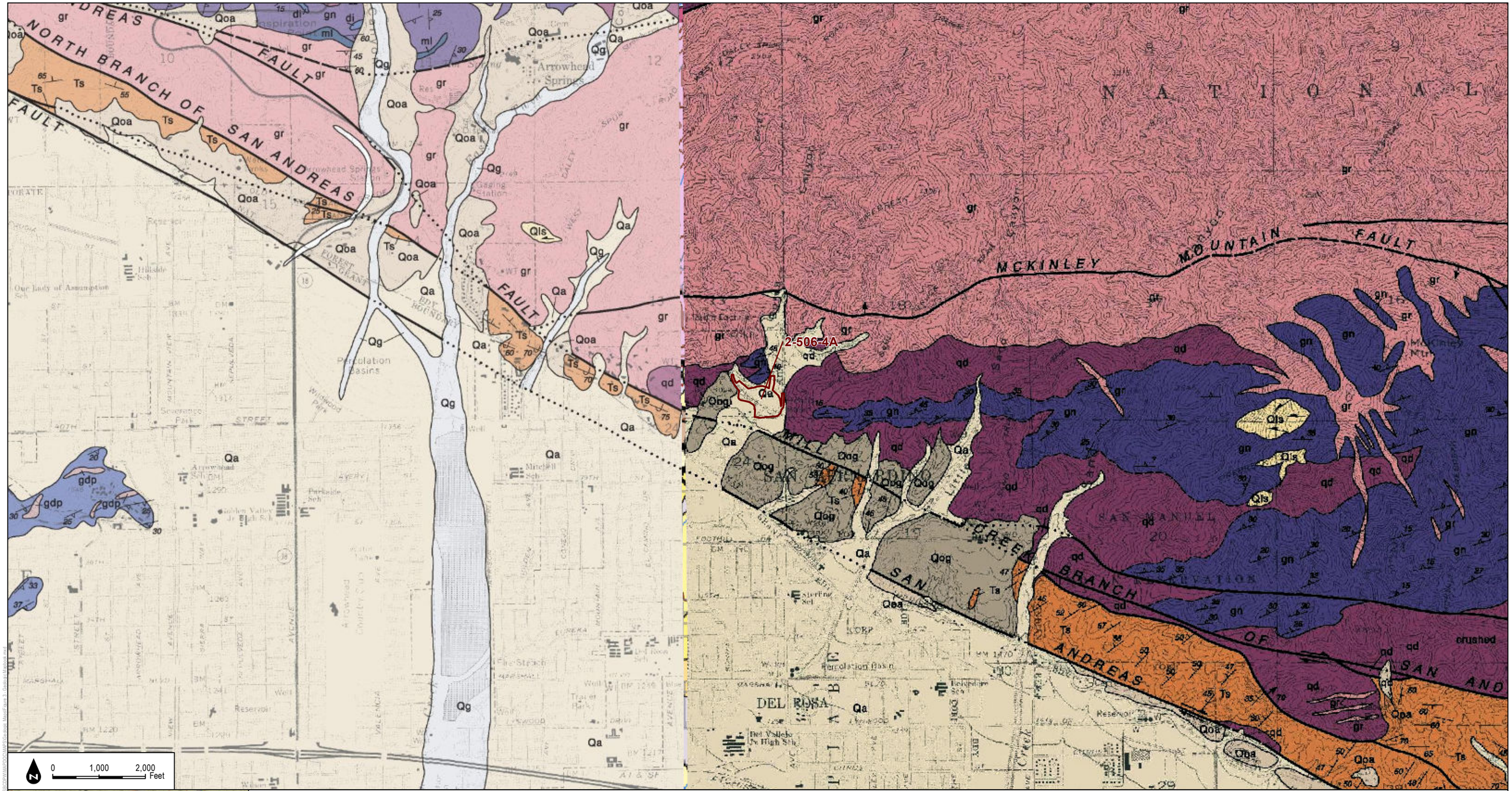
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

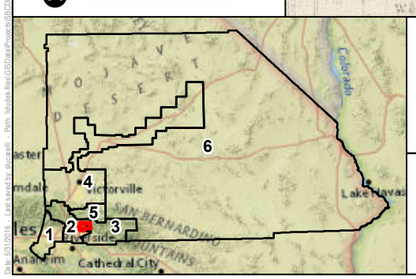
MAP 85

Zone 2 - City Creek Levee, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

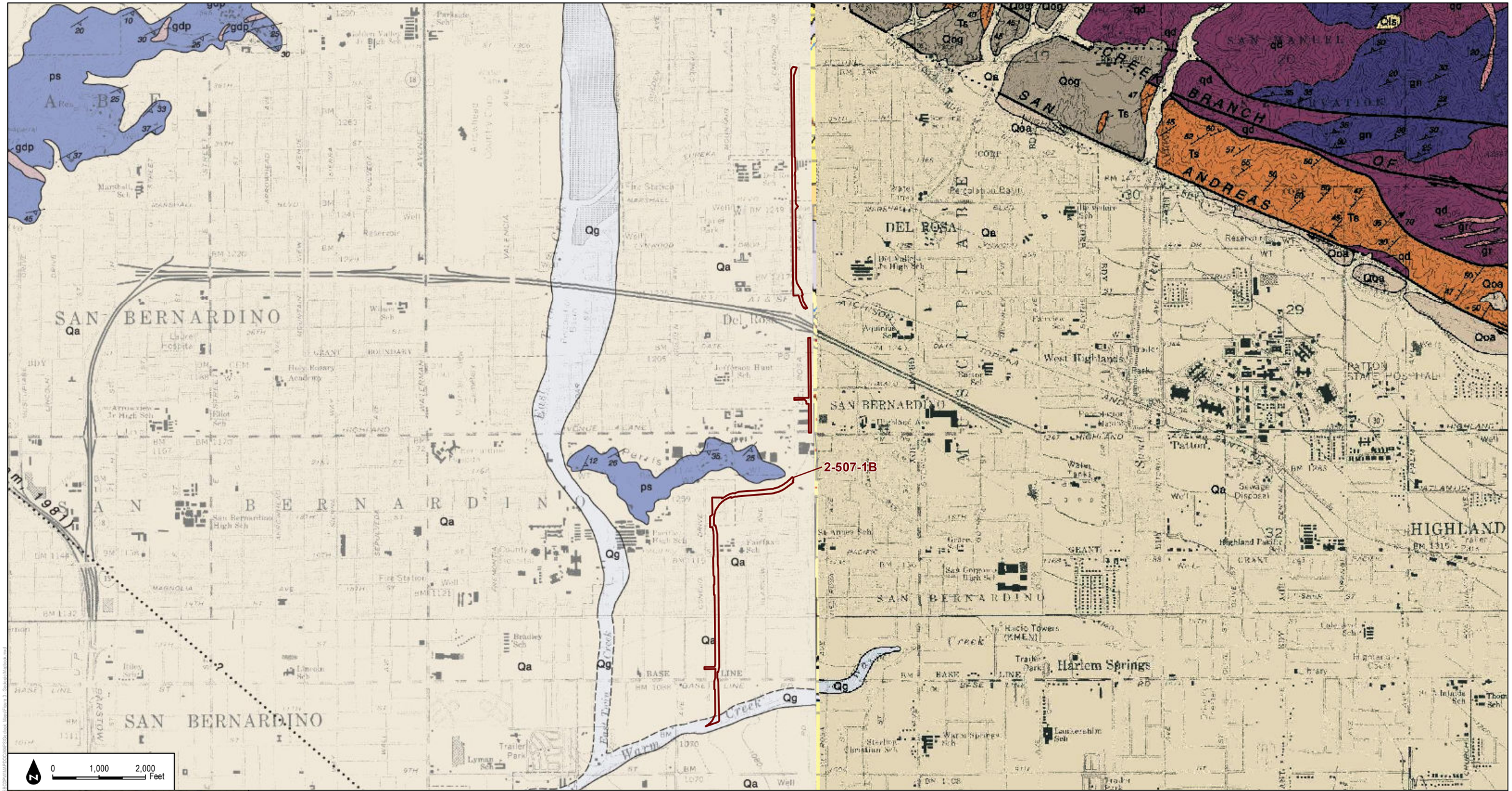
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

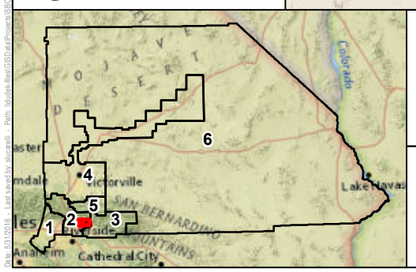
MAP 86

Zone 2 - Daley Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

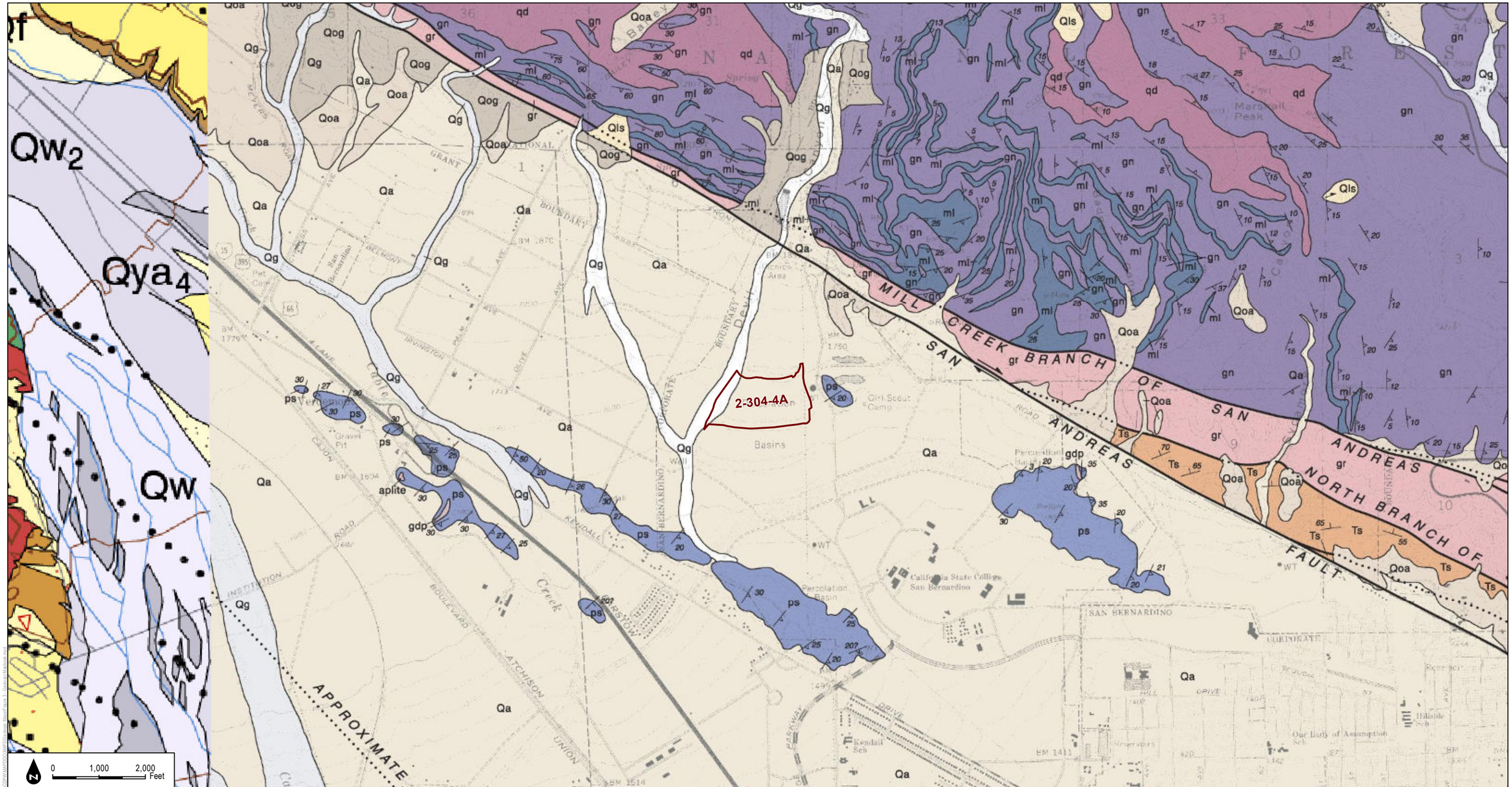
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

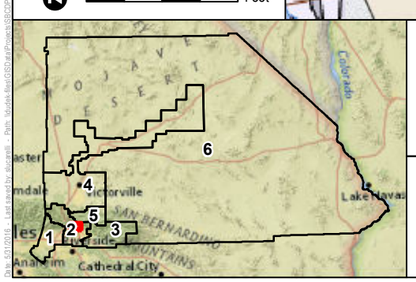
MAP 87

Zone 2 - Del Rosa Channel (Daley Channel)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

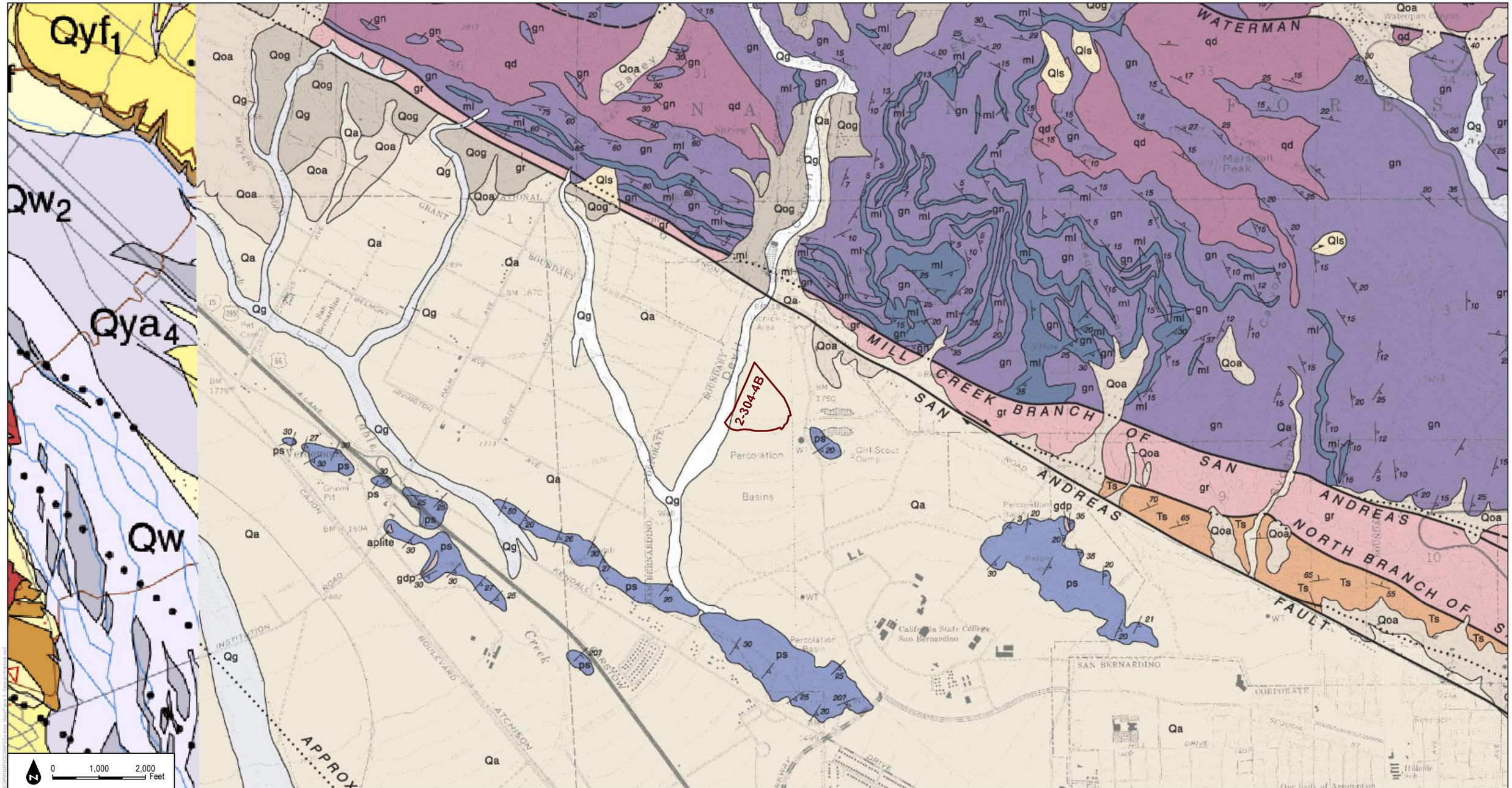
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

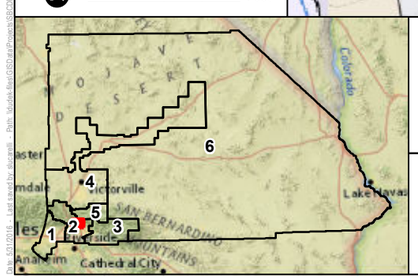
MAP 88

Zone 2 - Devil Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

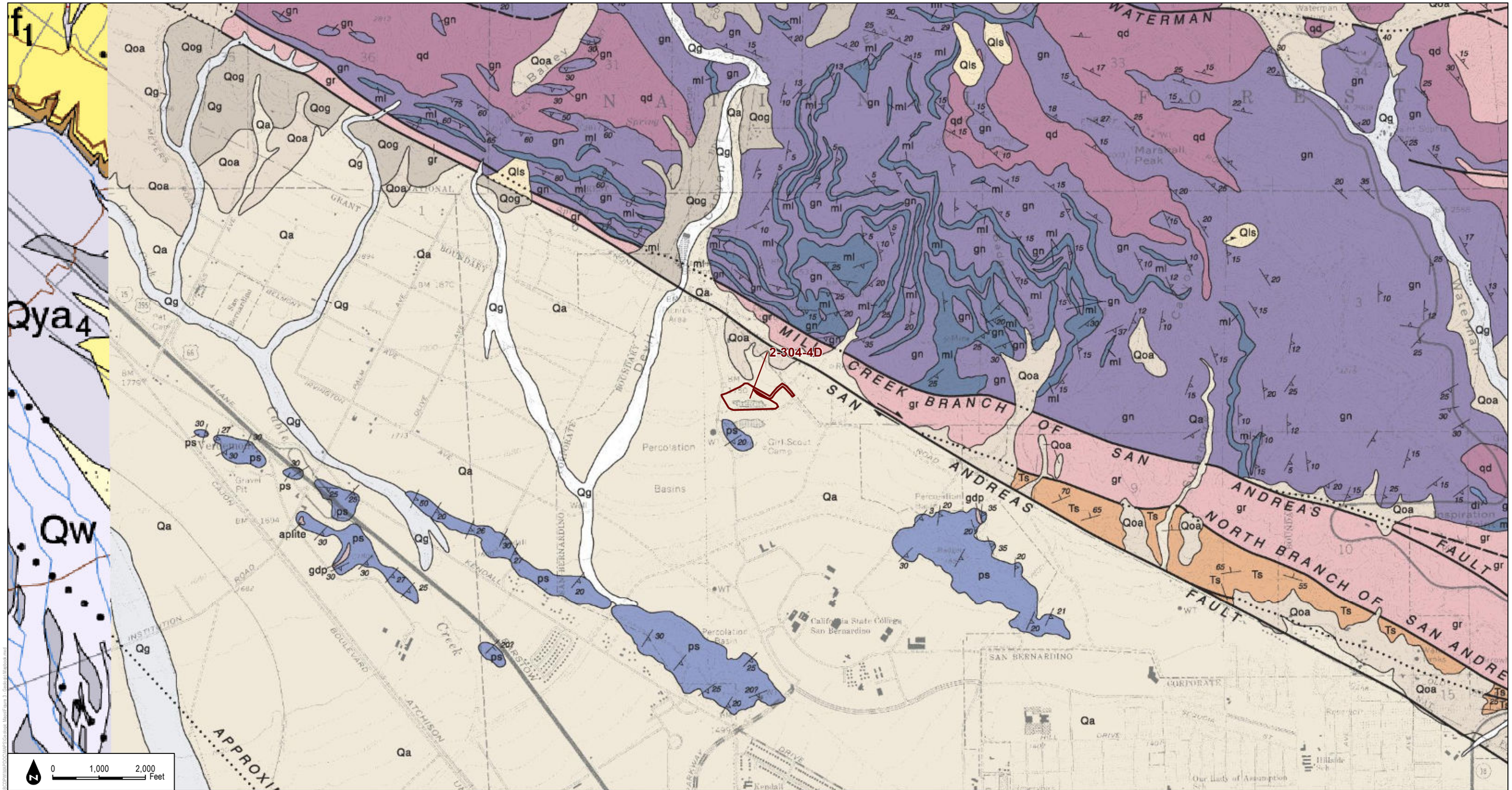
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

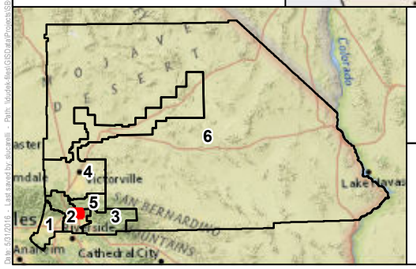
MAP 89

Zone 2 - Devil Basin #3

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

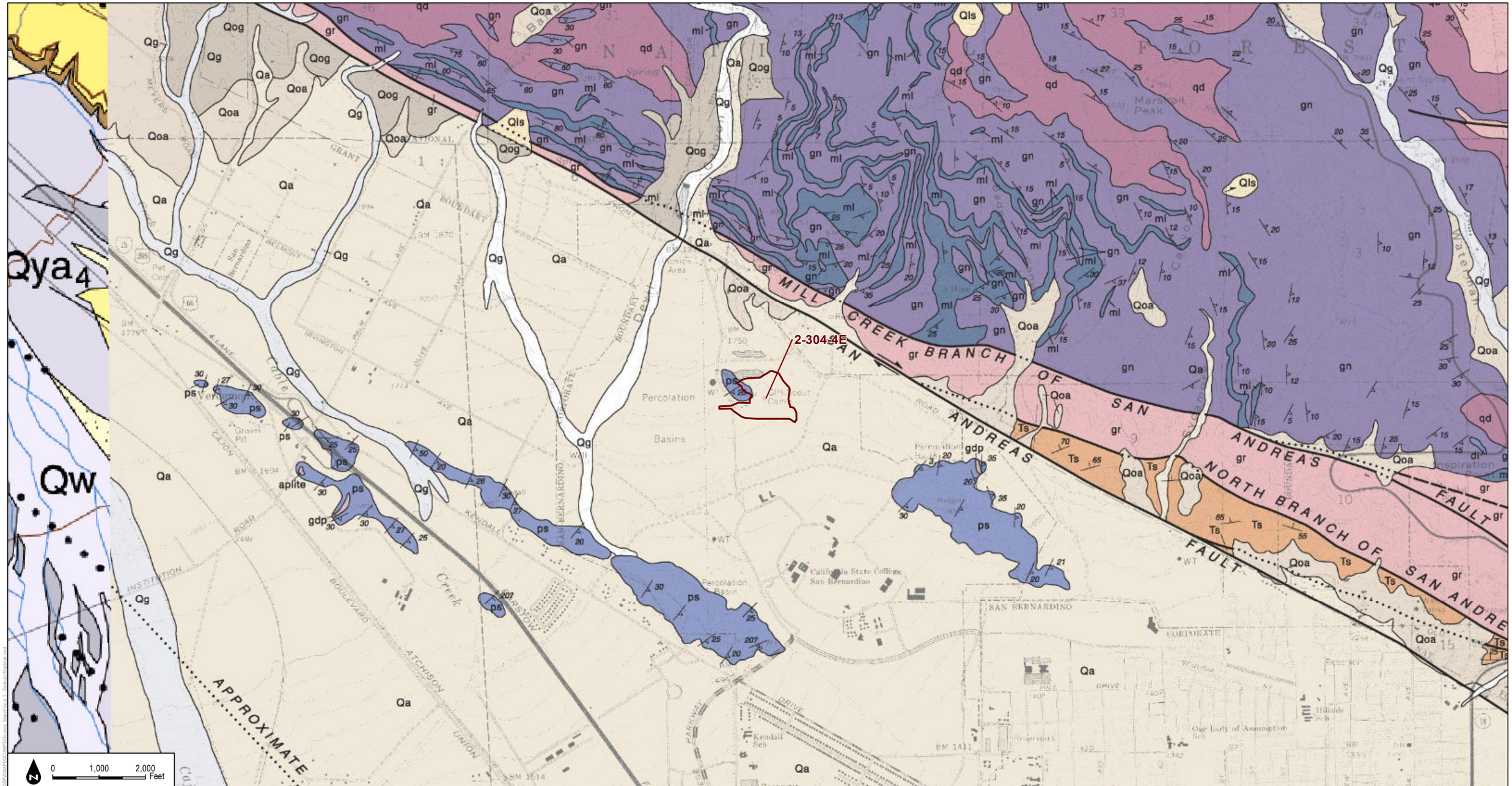
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

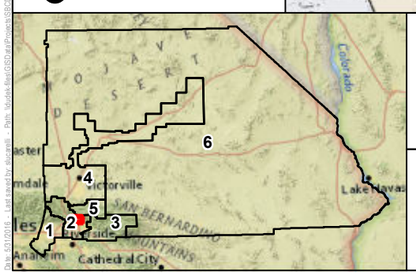
San Bernardino Department of Public Works

MAP 90

Zone 2 - Devil Basin #5

Geologic Map





Redbook Polygons

1:24,000

DUDEK

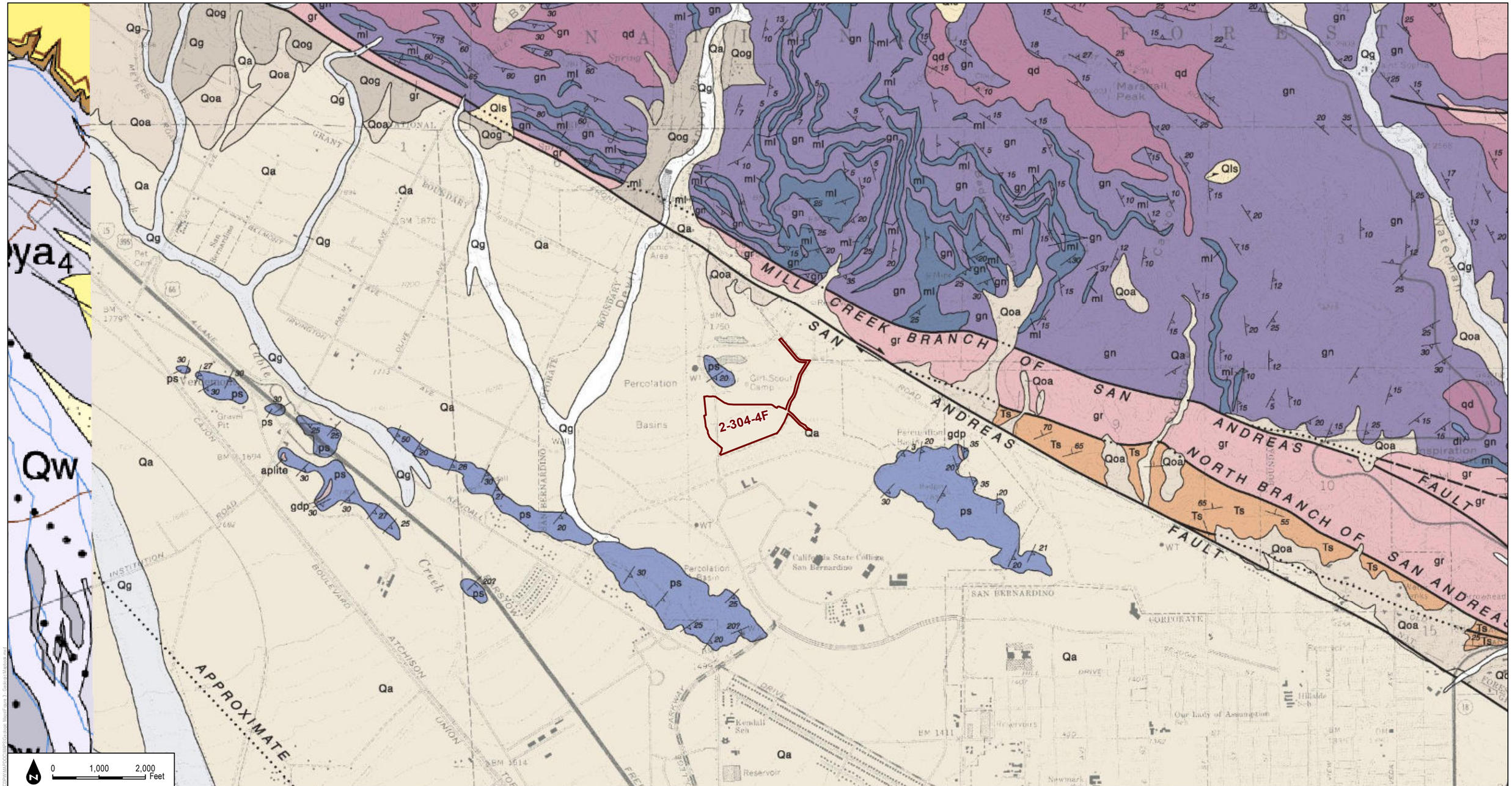
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

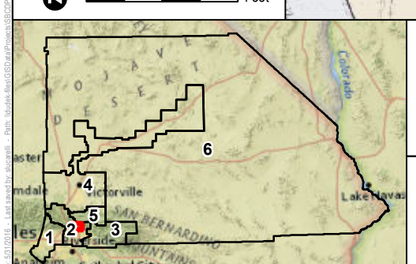
MAP 91

Zone 2 - Devil Basin #6

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

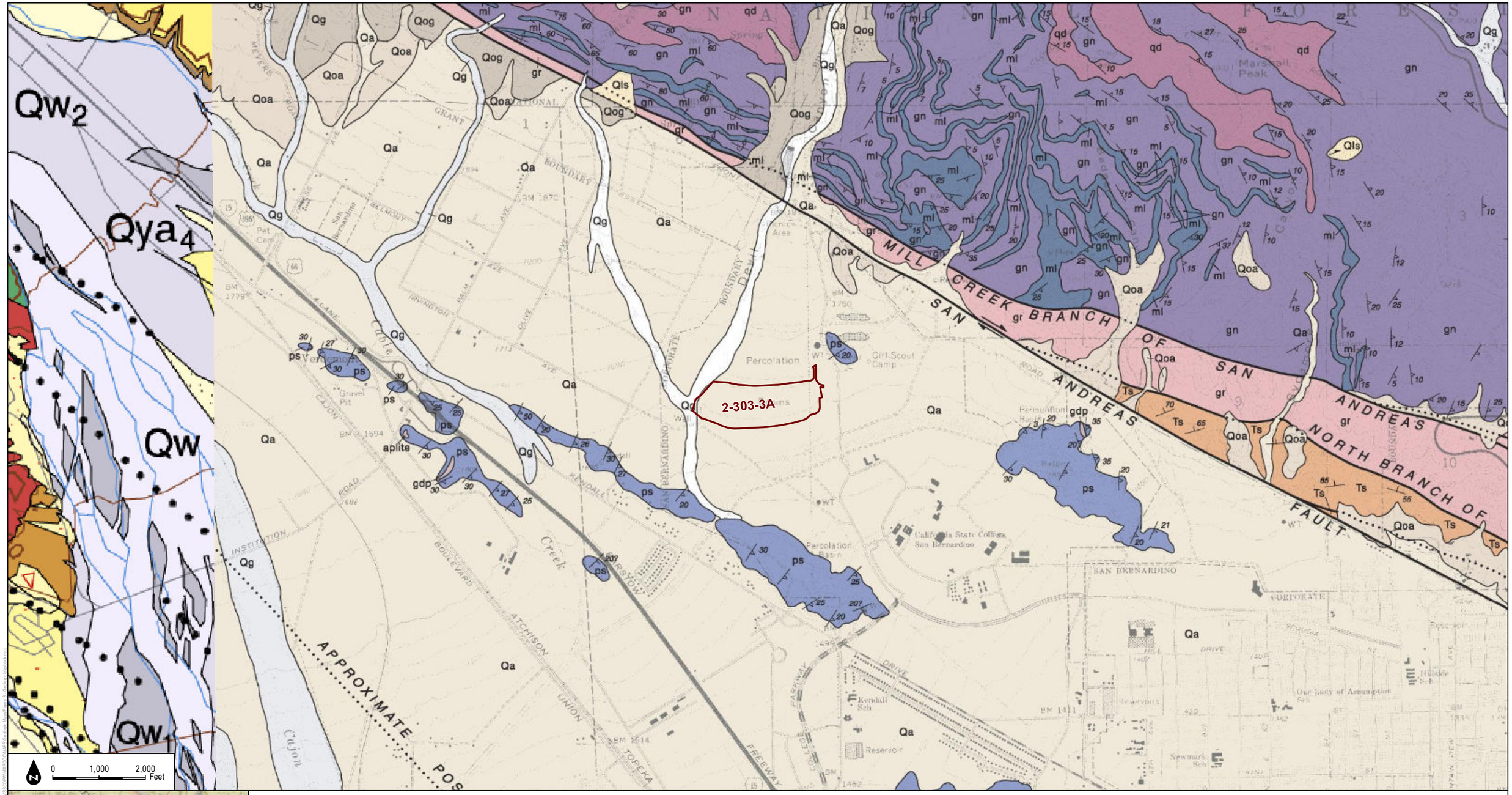
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

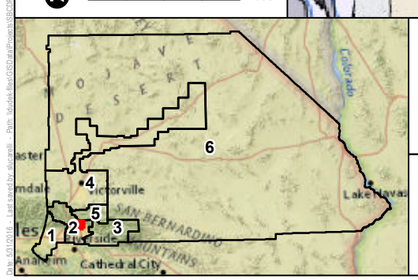
MAP 92

Zone 2 - Devil Basin #7

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

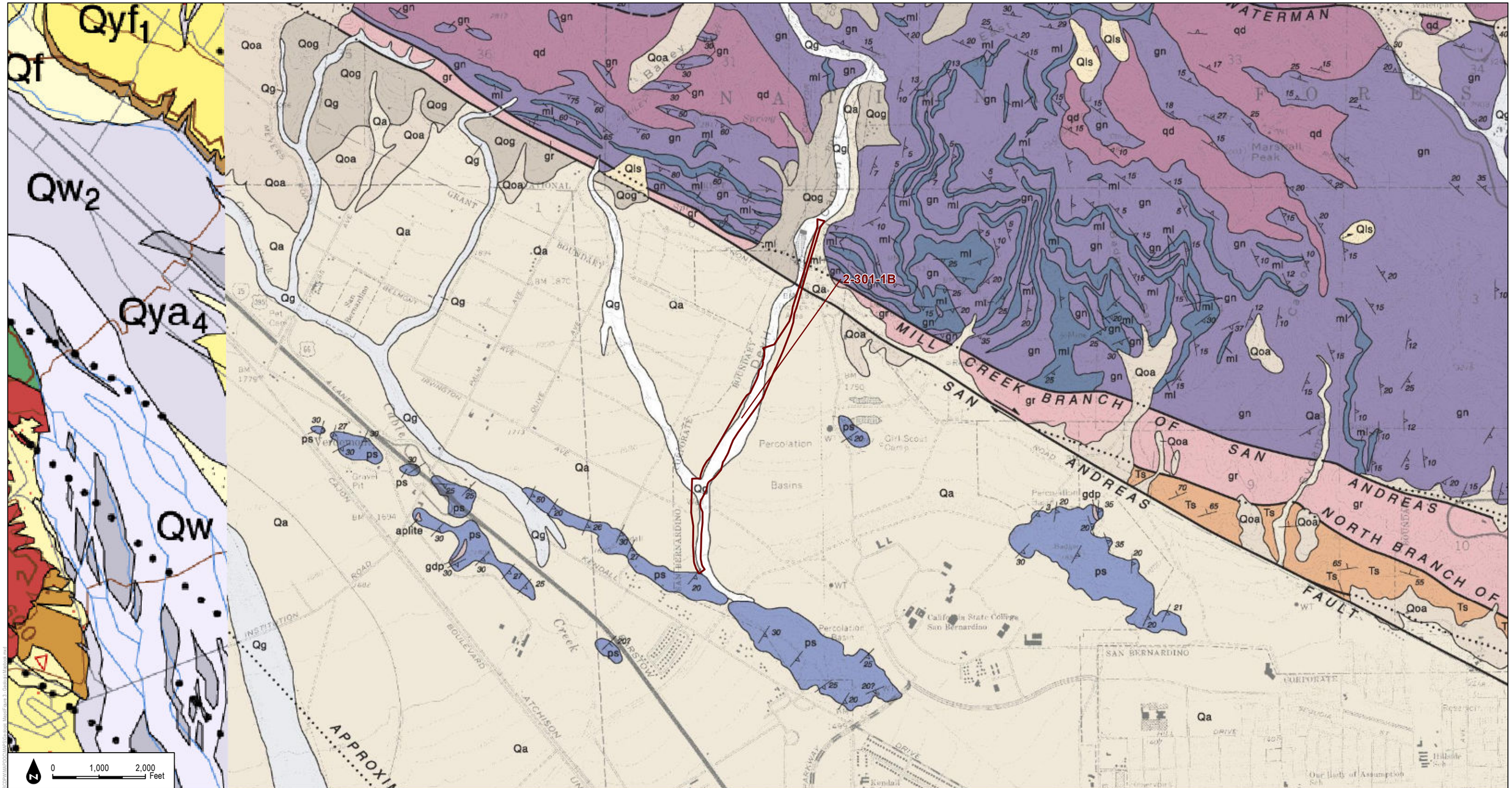
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

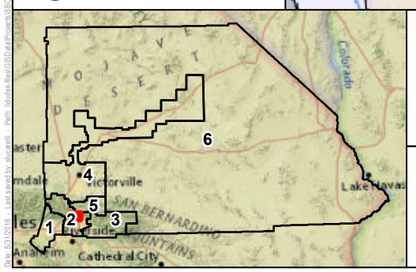
MAP 93

Zone 2 - Devil Canyon Dam (Basin #1) (DSOD)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

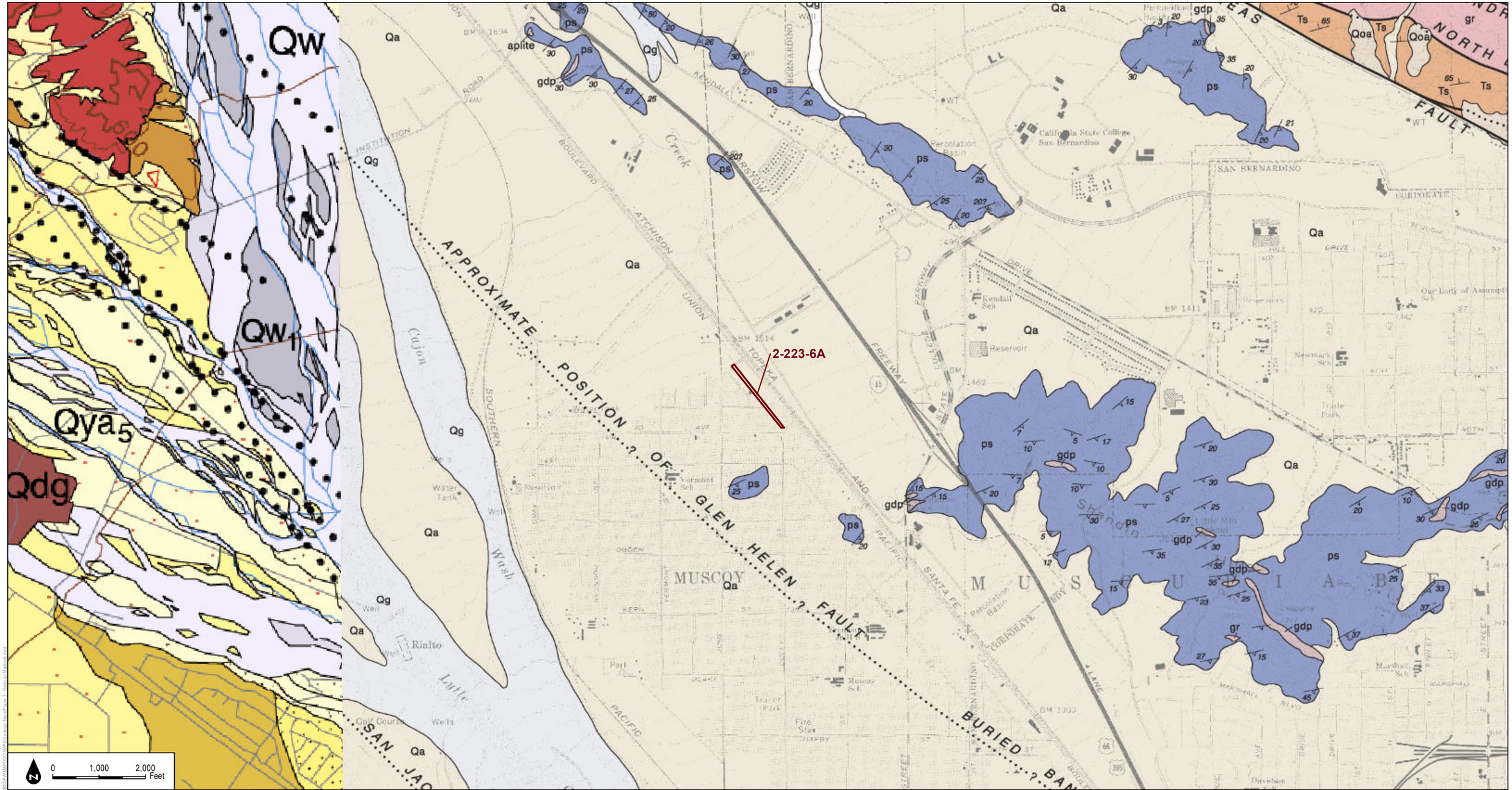
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

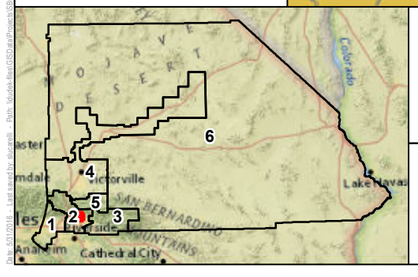
MAP 94

Zone 2 - Devil Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

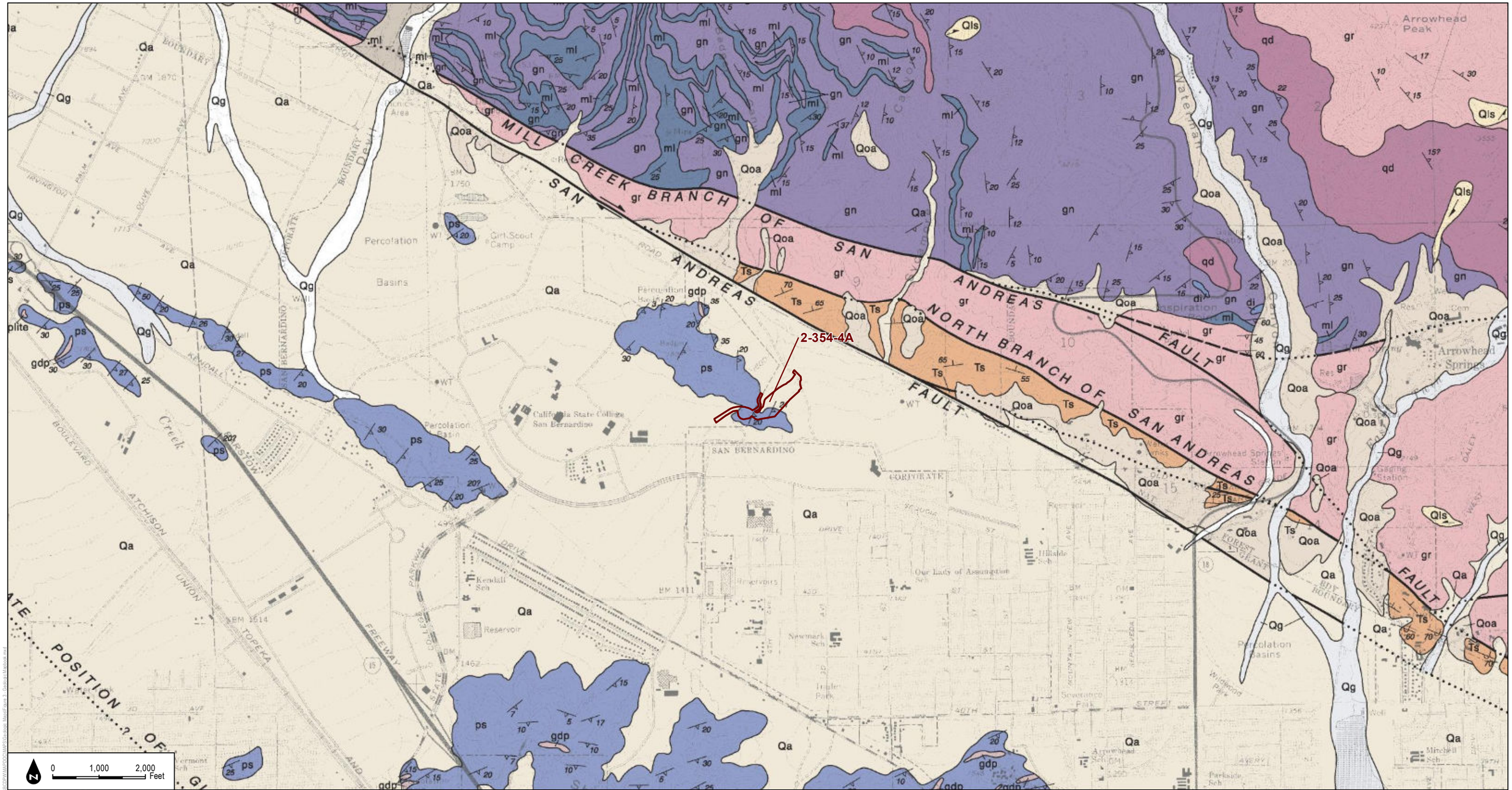
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

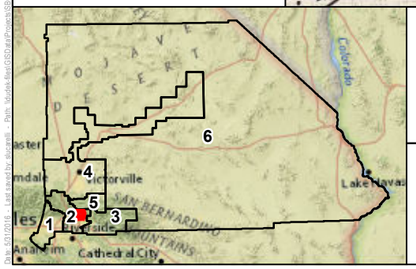
MAP 95

Zone 2 - Duffy Street Storm Drain

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

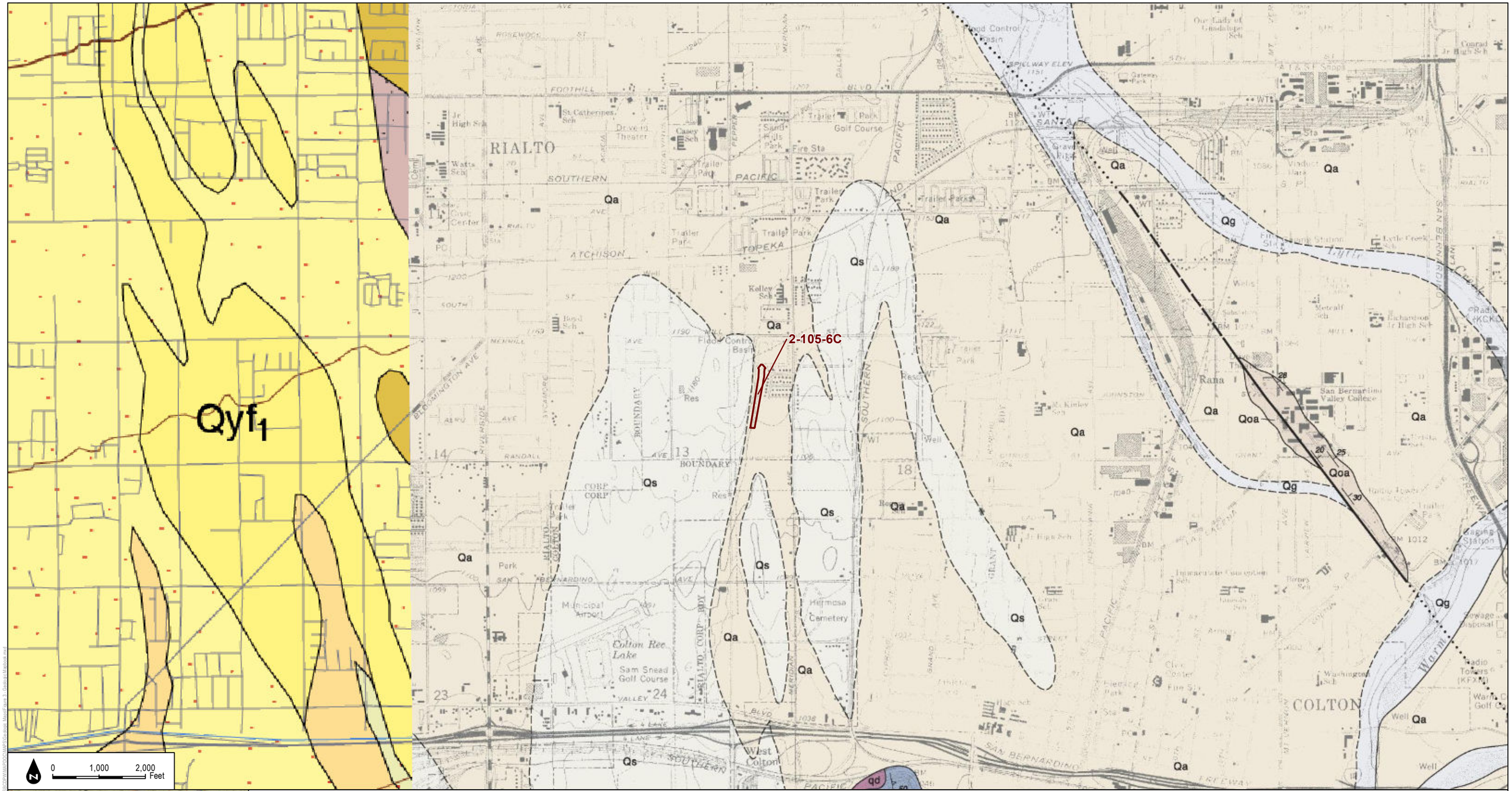
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

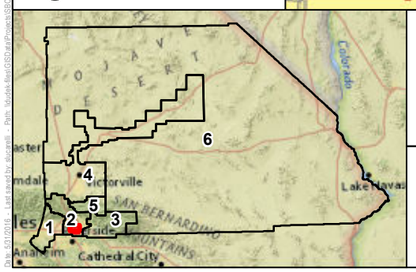
MAP 96

Zone 2 - East Badger Basin & Spillway

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

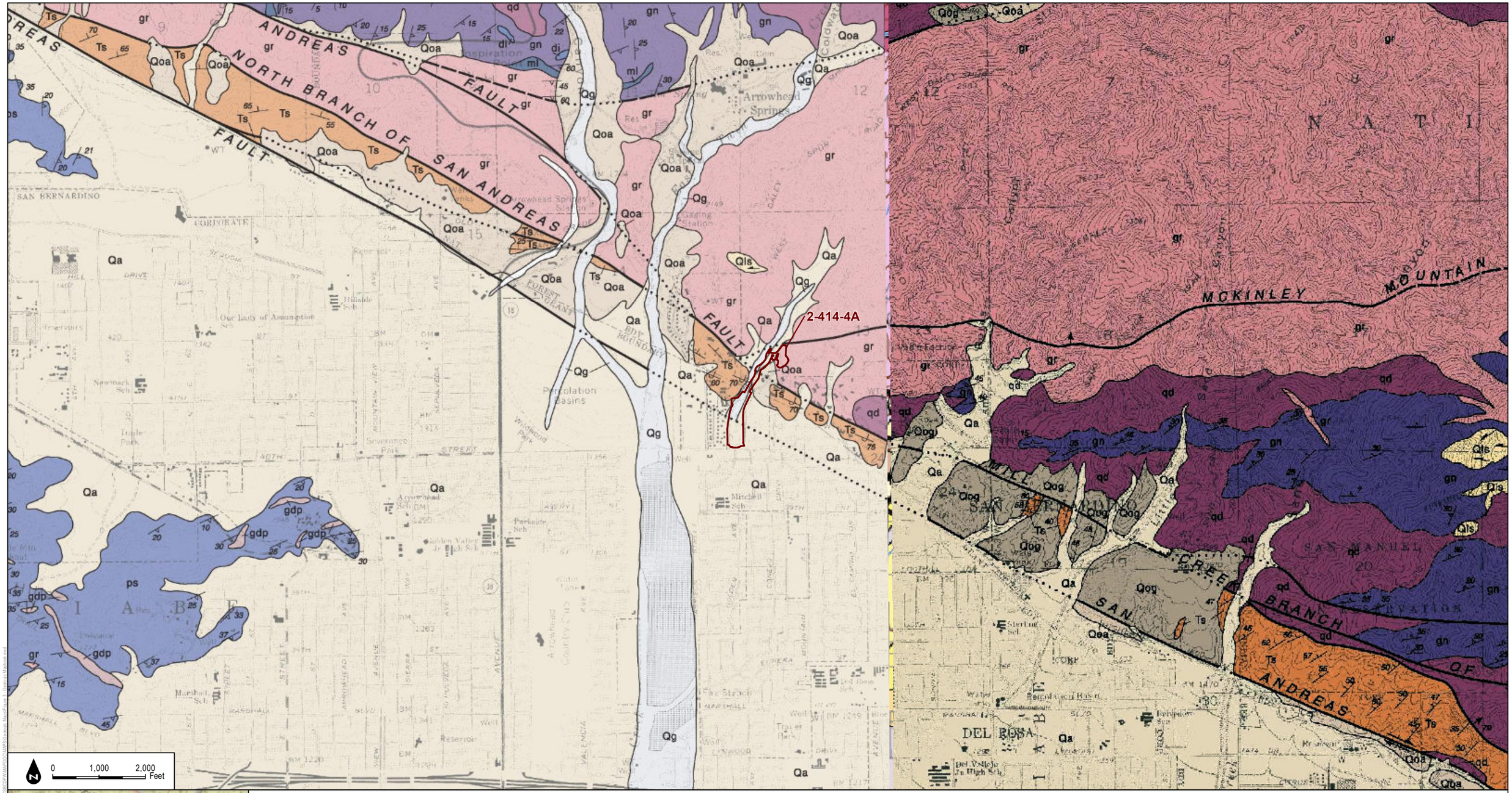
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

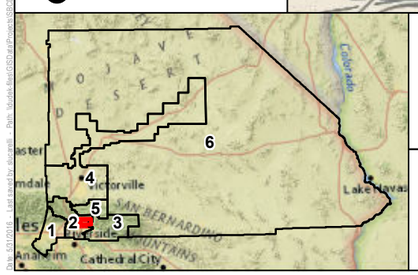
MAP 97

Zone 2 - East Rialto Storm Drain

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

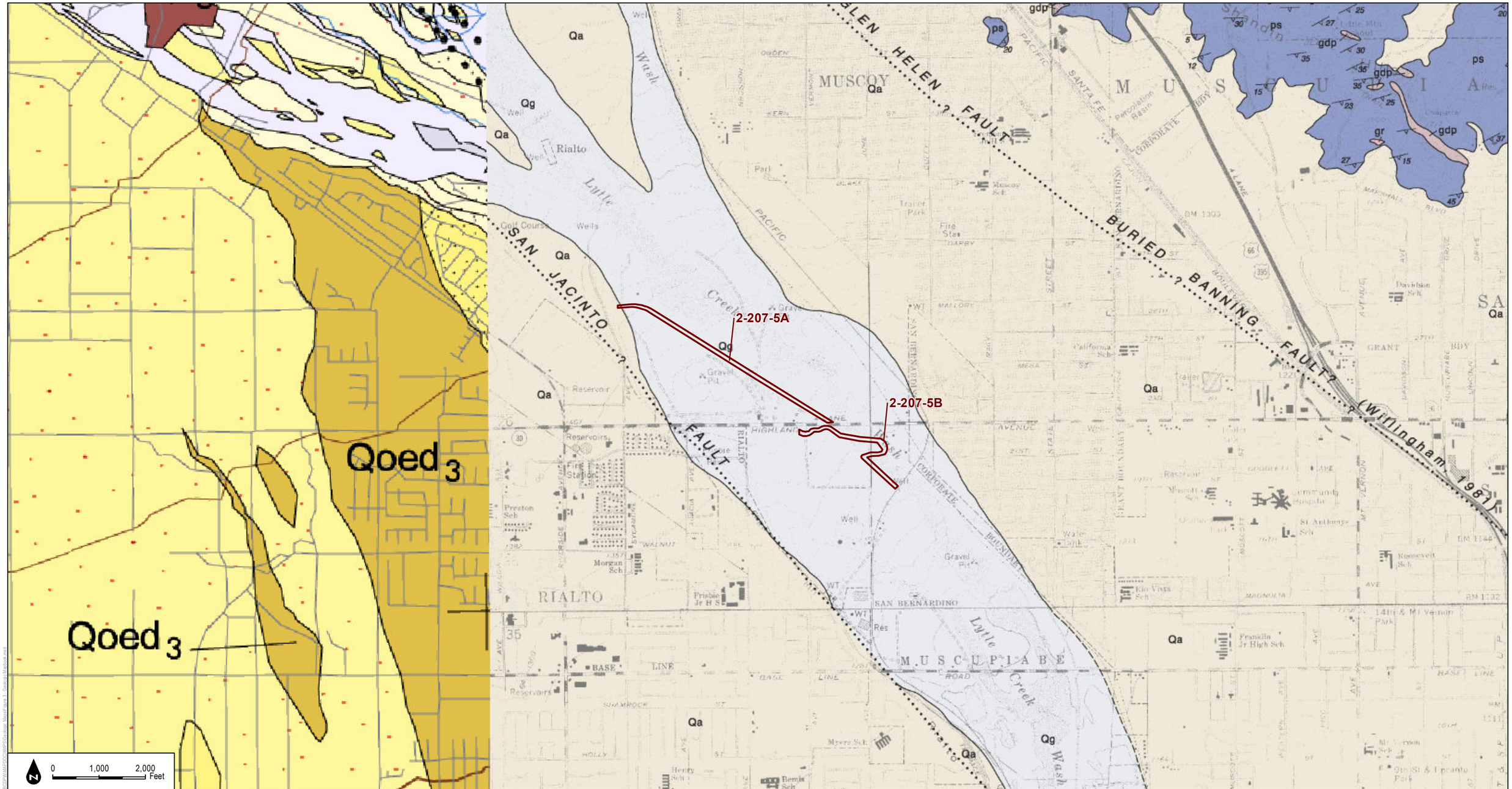
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

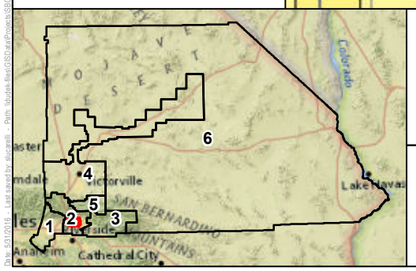
MAP 98

Zone 2 - Harrison Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

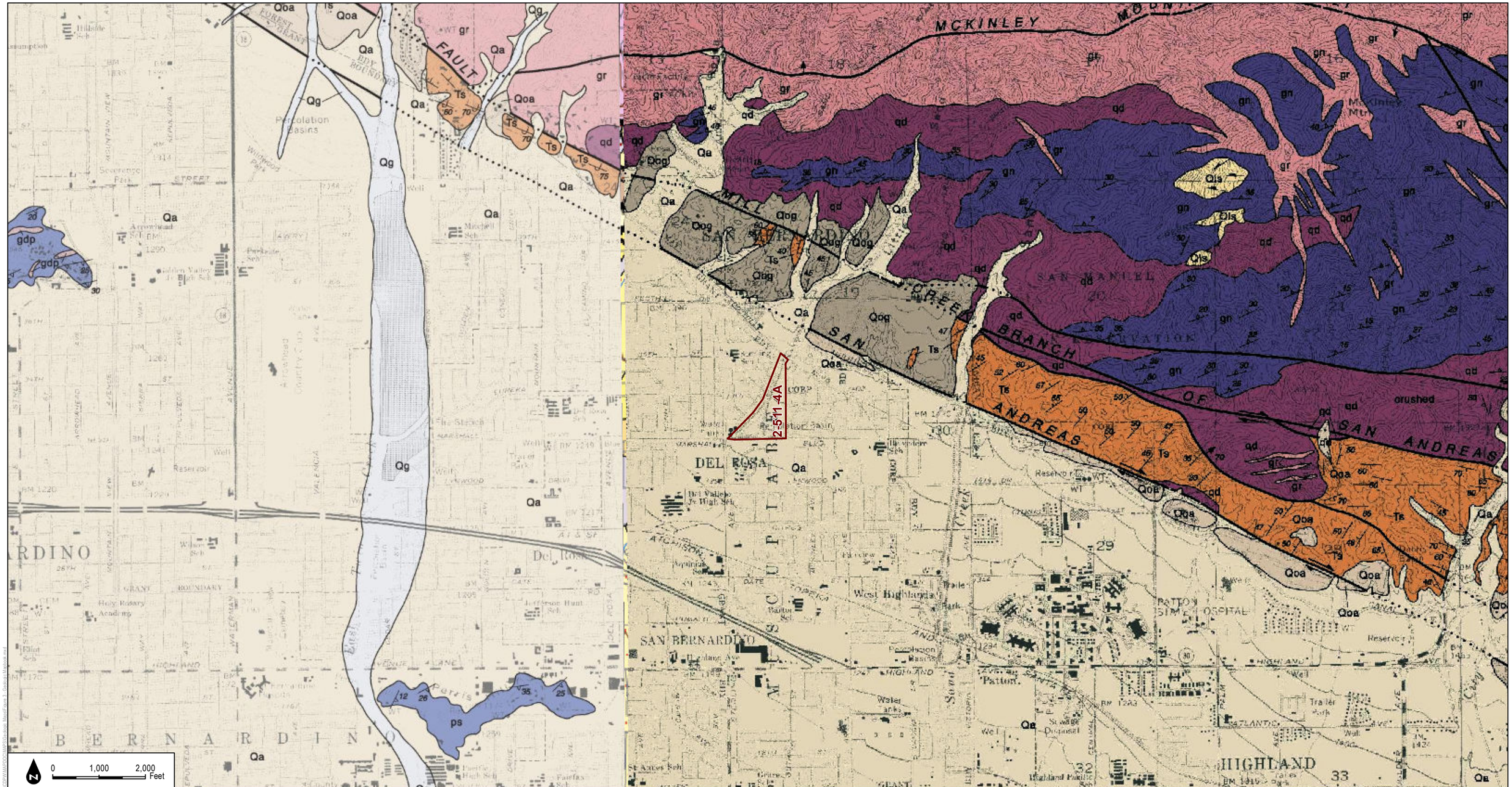
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

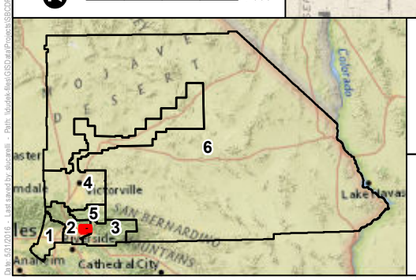
San Bernardino Department of Public Works

MAP 99

Zone 2 - Island Levee, COE

Geologic Map





Redbook Polygons

1:24,000

DUDEK

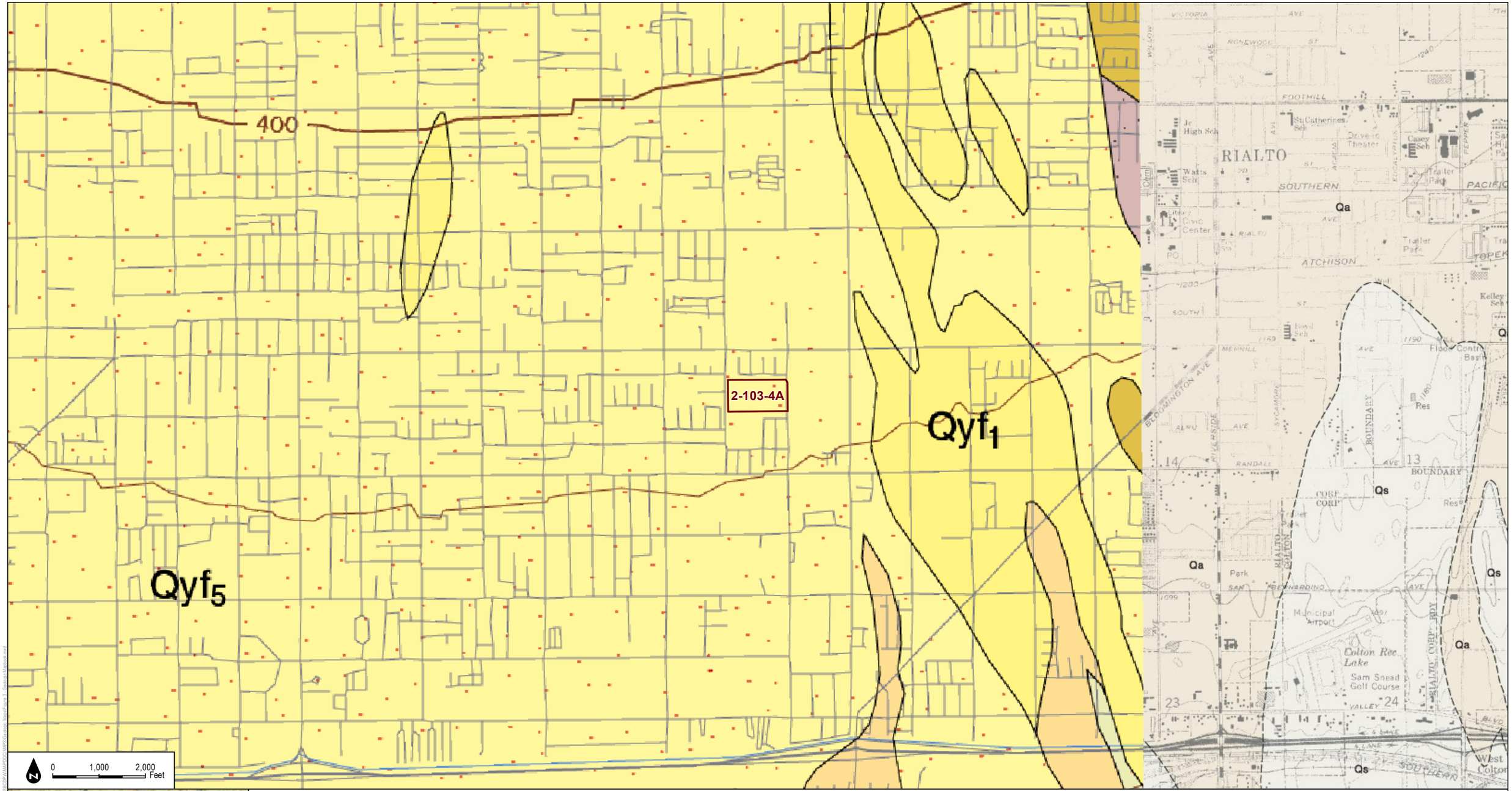
SOURCE: San Bernardino County Flood Control District, Dibblee / California Geological Society

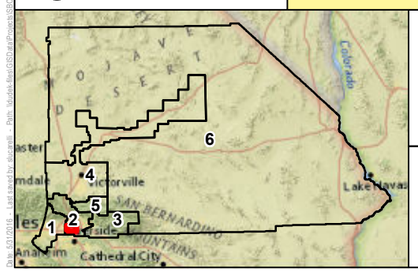
MAP 100

Zone 2 - Lemon Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

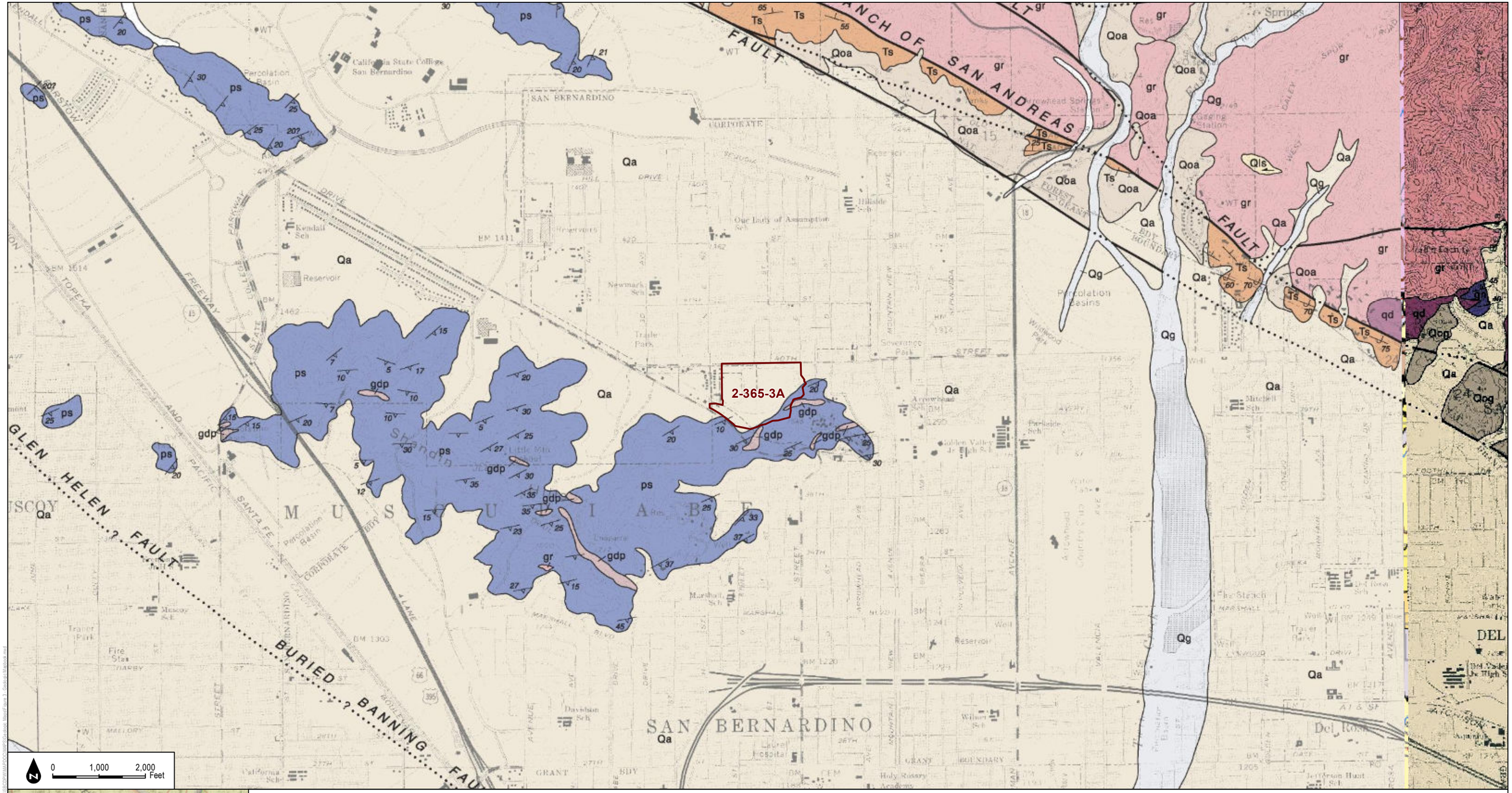
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

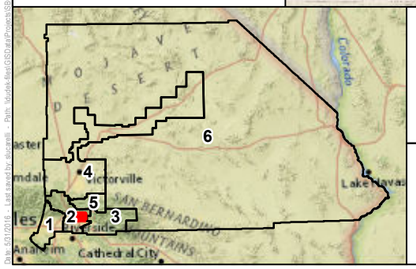
MAP 101

Zone 2 - Linden Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

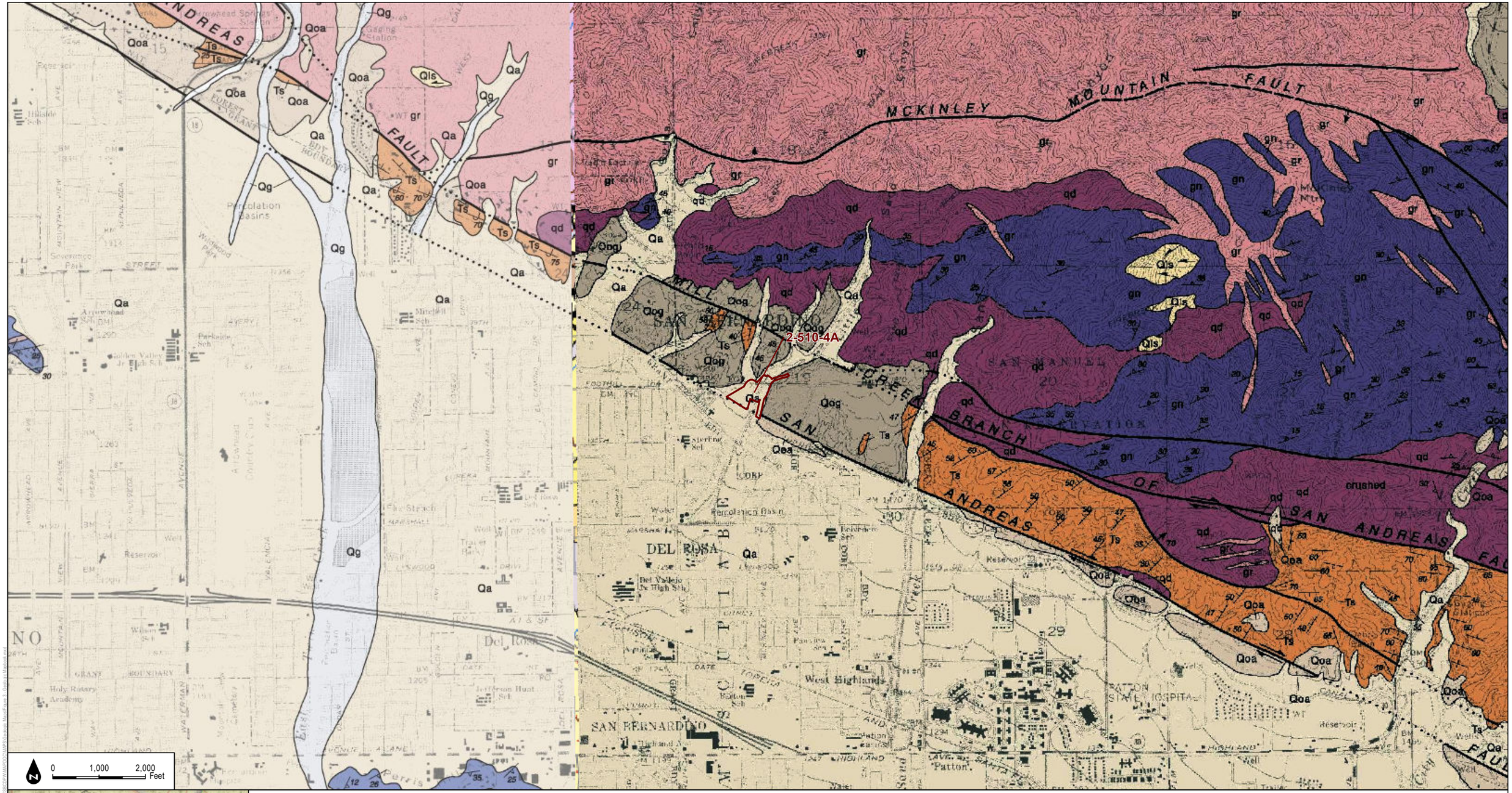
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

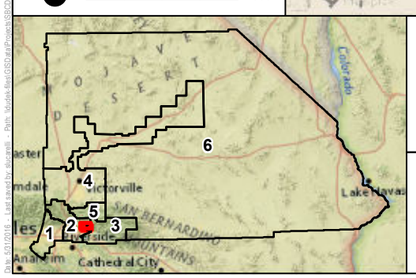
MAP 102

Zone 2 - Little Mountain Dam (DSOD)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

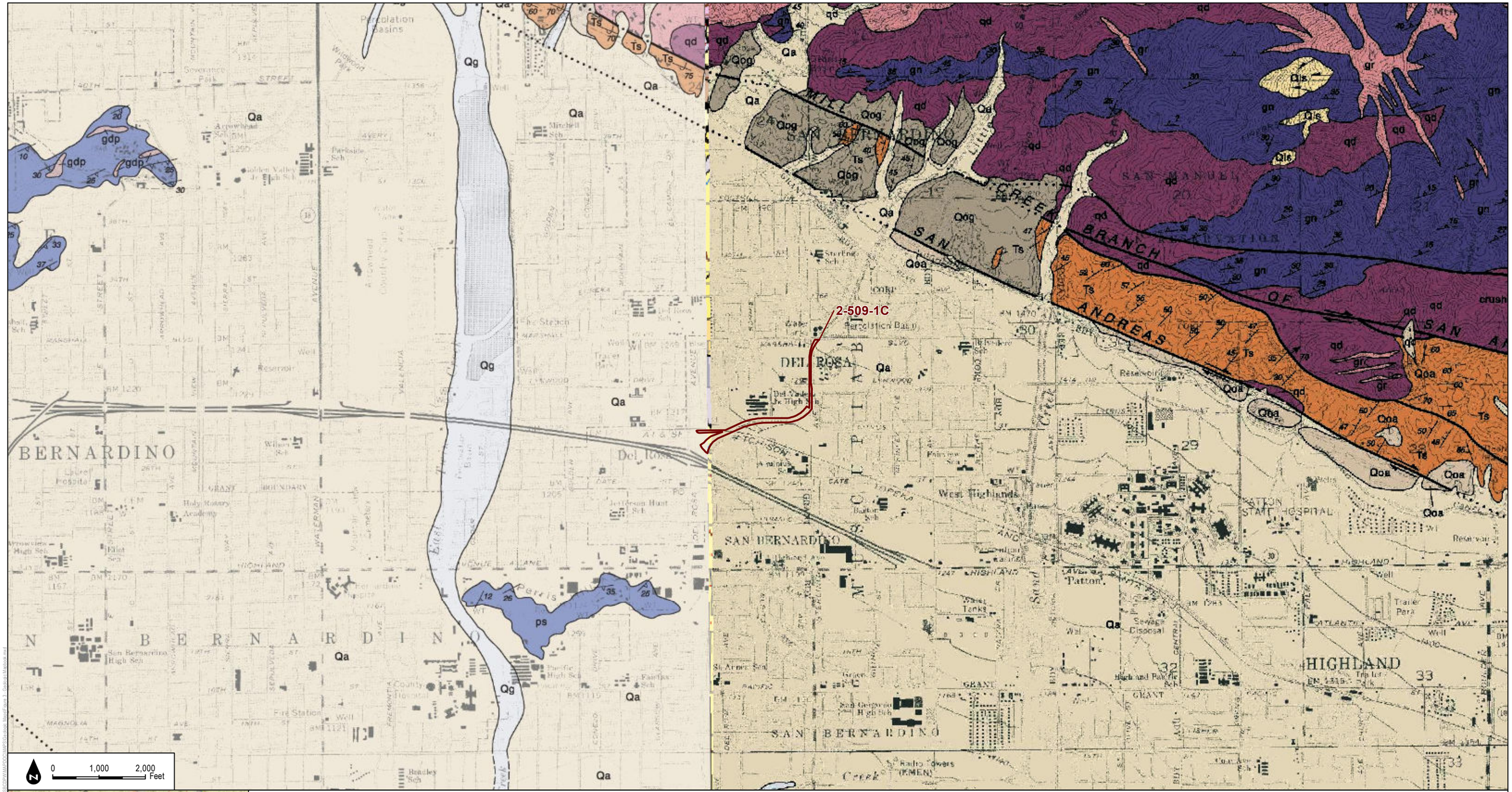
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

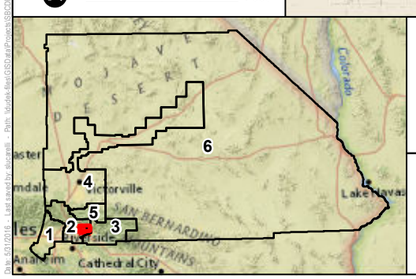
MAP 103

Zone 2 - Little Sand Canyon Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

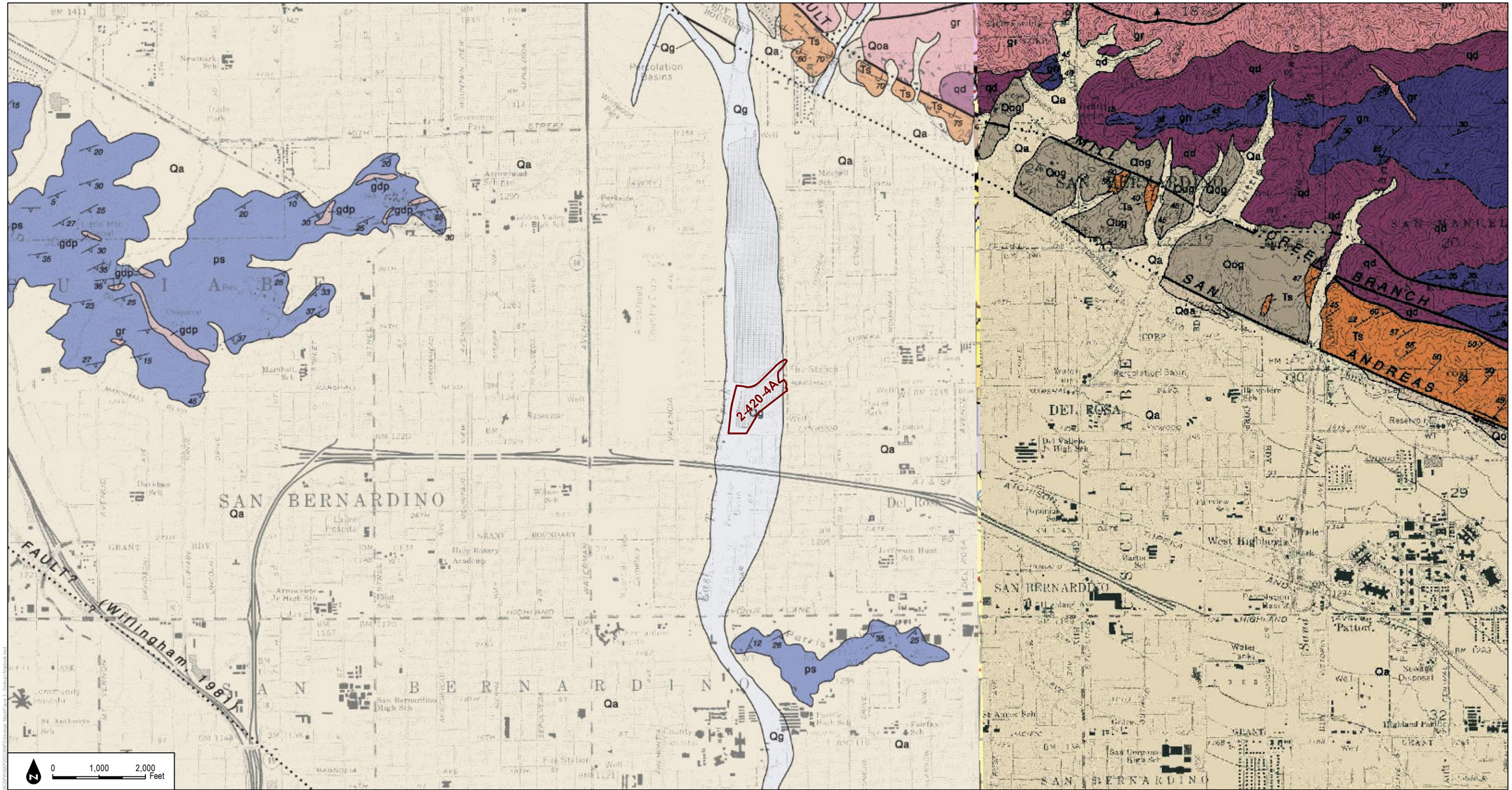
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

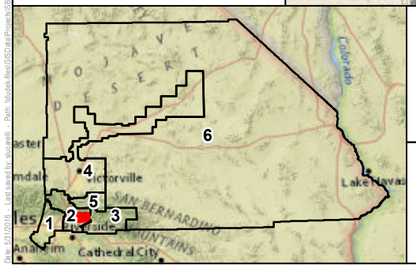
MAP 104

Zone 2 - Little Sand Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

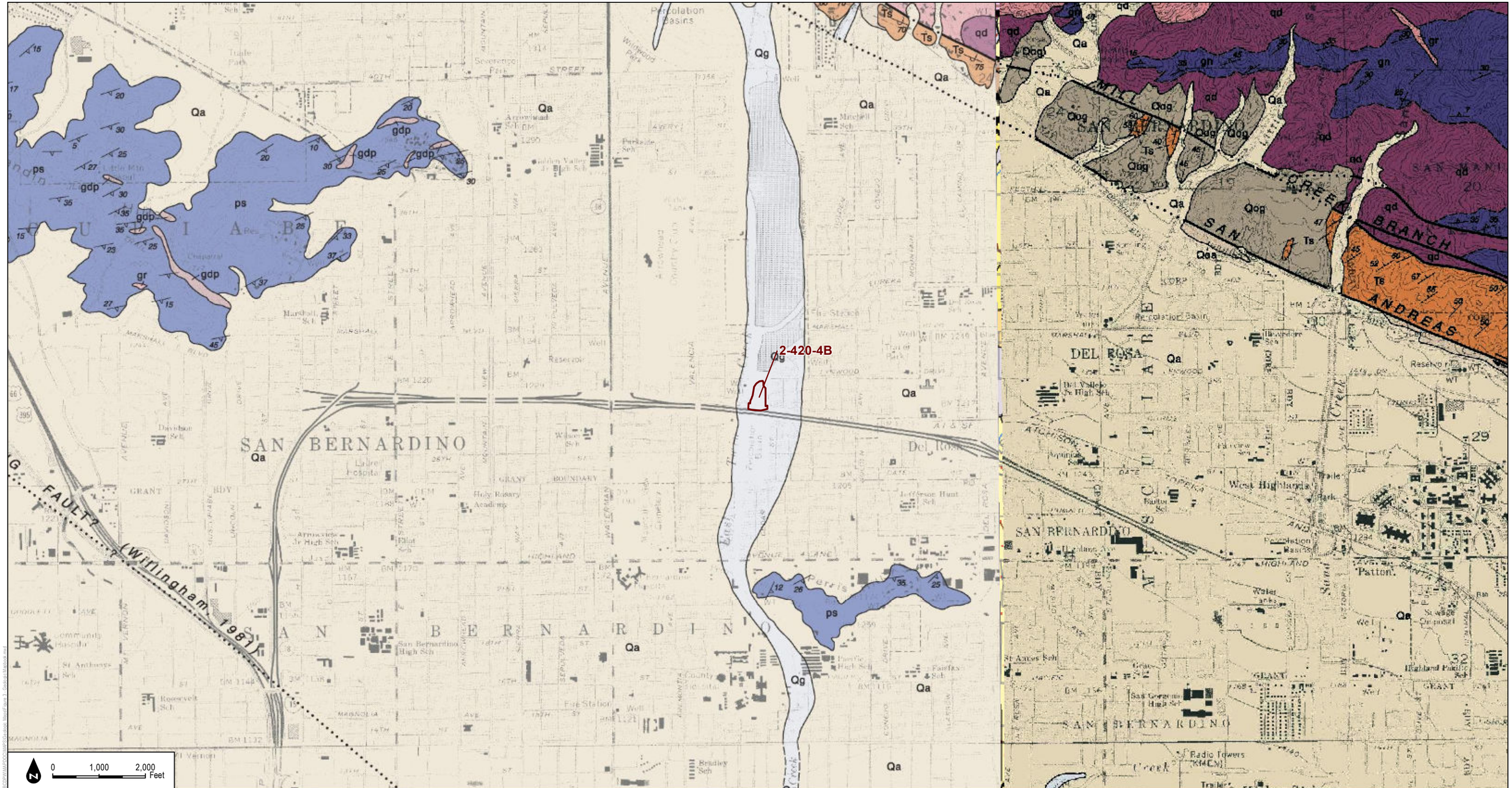
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

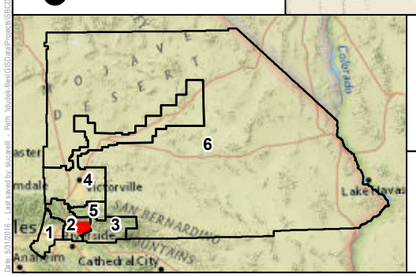
MAP 105

Zone 2 - Lynwood Basin #1

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

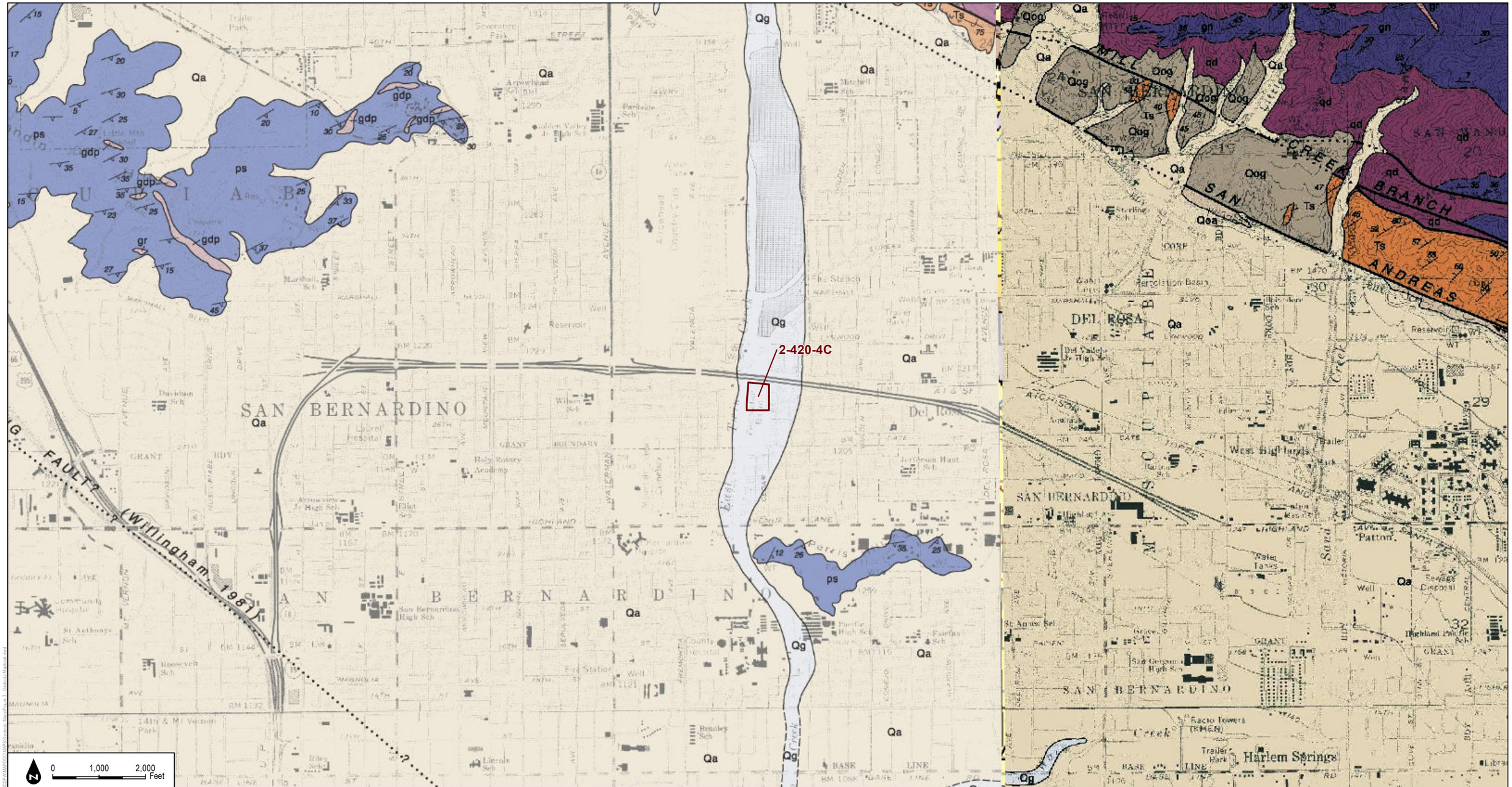
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

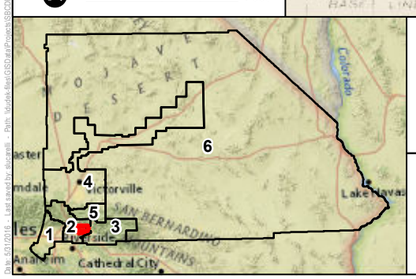
MAP 106

Zone 2 - Lynwood Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

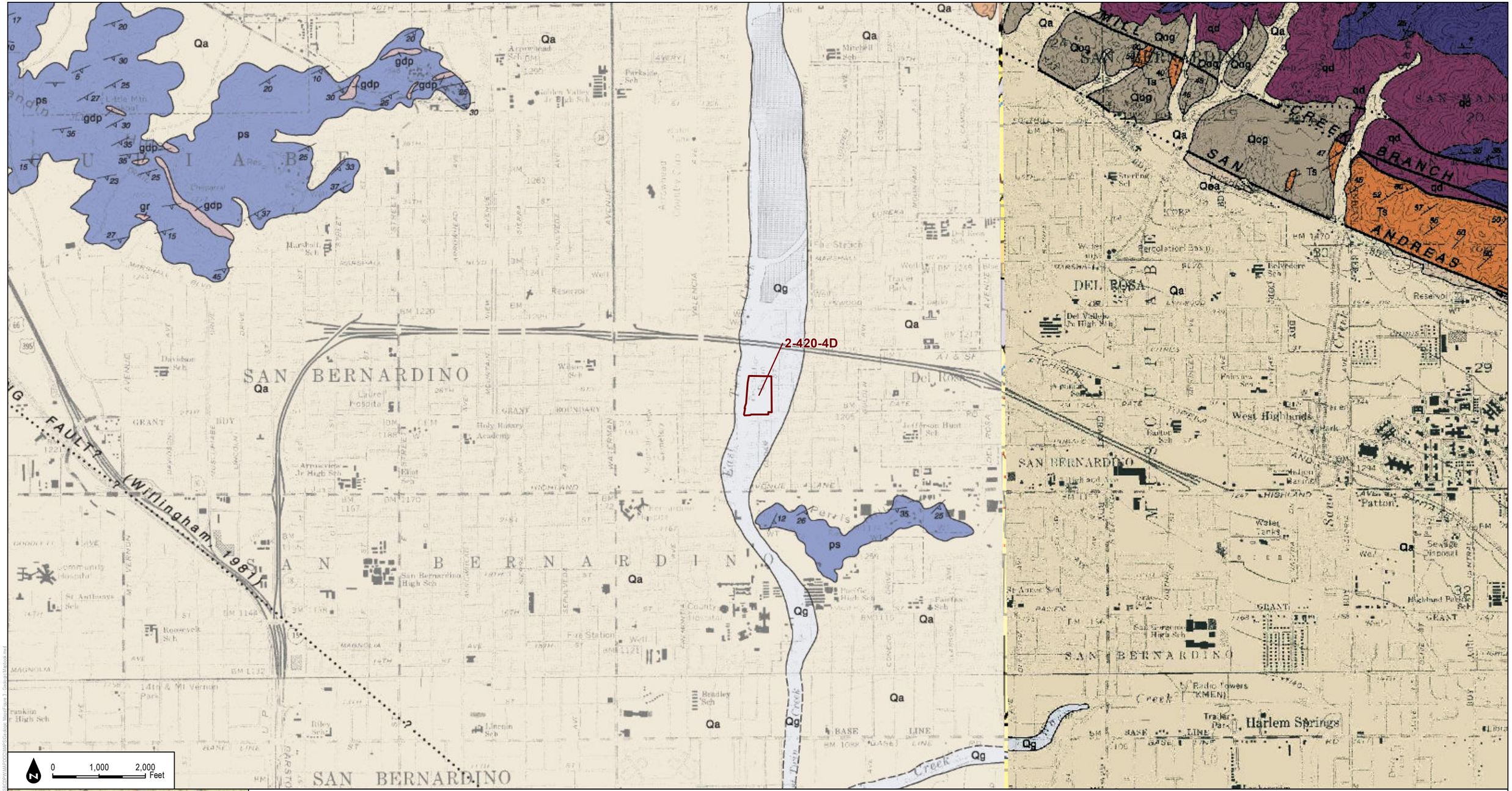
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

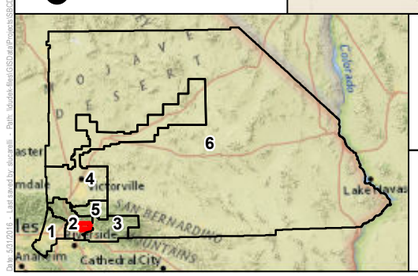
MAP 107

Zone 2 - Lynwood Basin #3

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

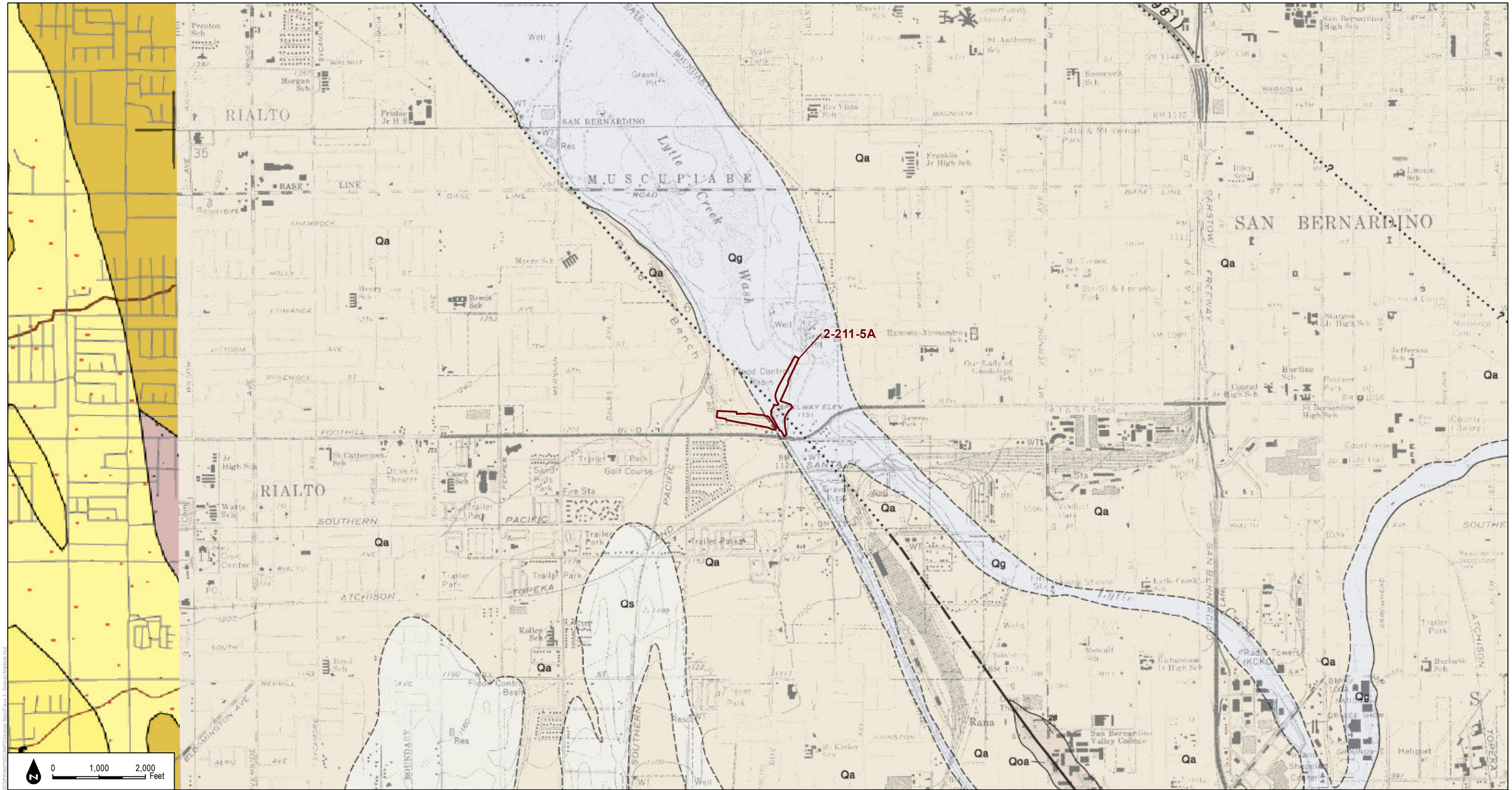
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

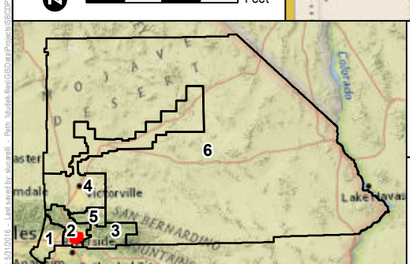
MAP 108

Zone 2 - Lynwood Basin #4

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

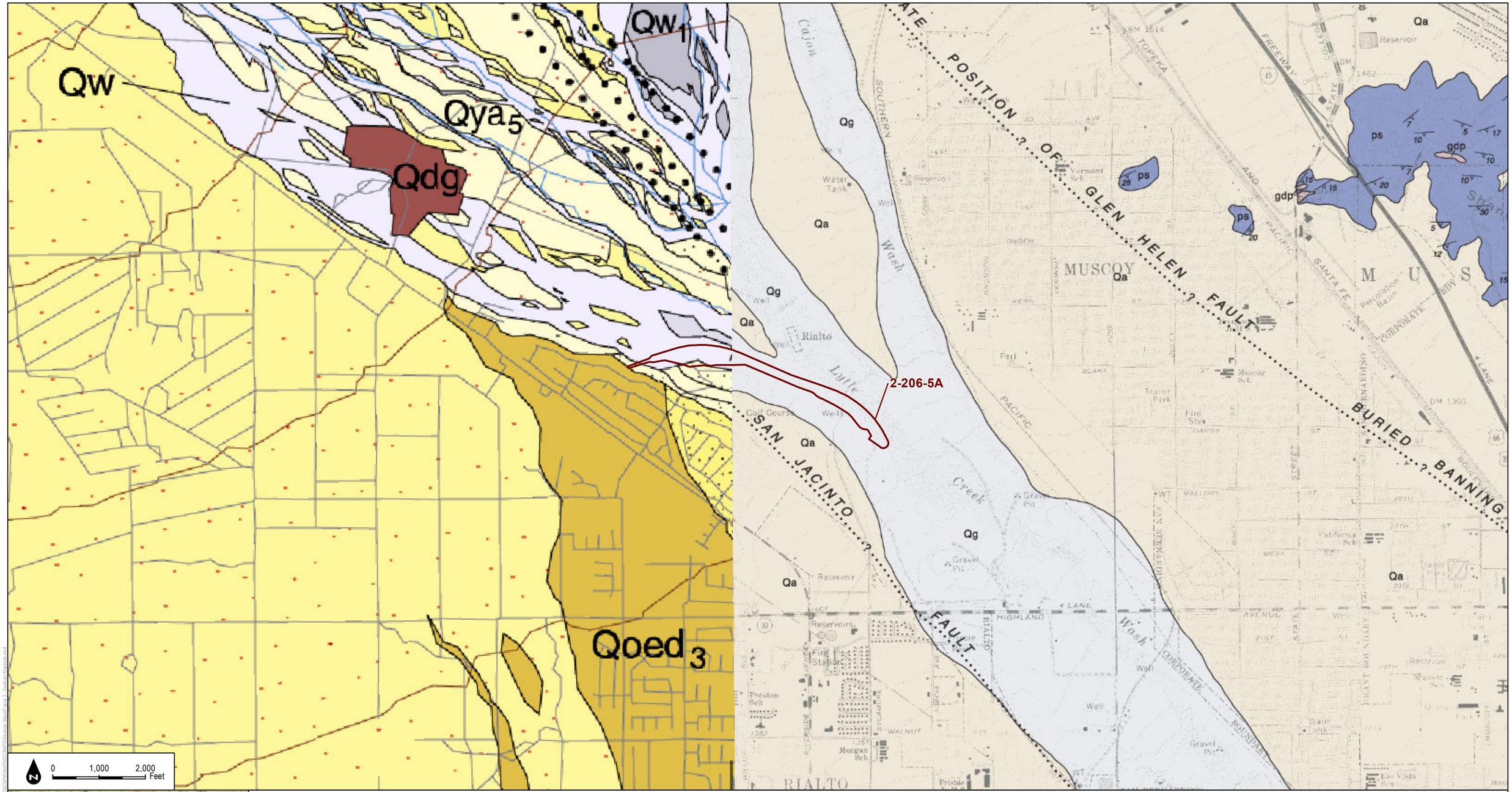
SOURCE: San Bernardino County Flood Control District, Dibblee / California Geological Society

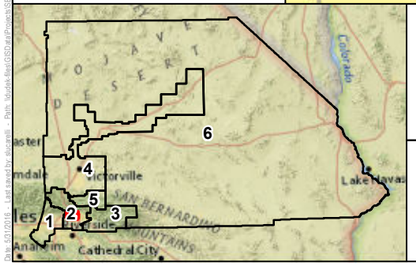
MAP 109

Zone 2 - Lytle Creek Gatehouse, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

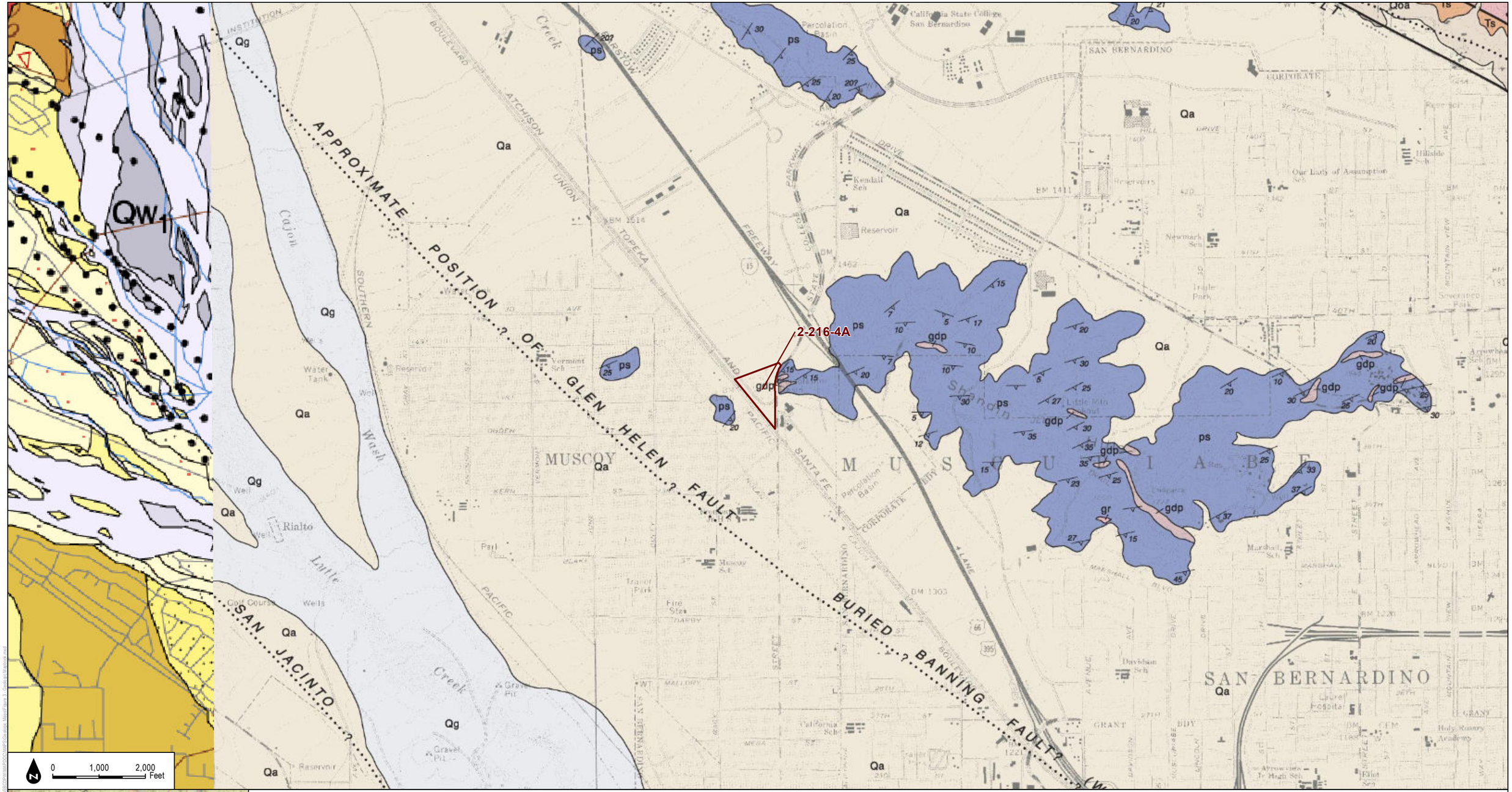
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

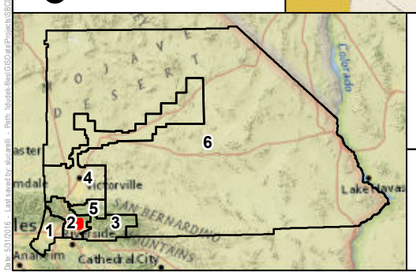
MAP 110

Zone 2 - Lytle Creek Levee, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

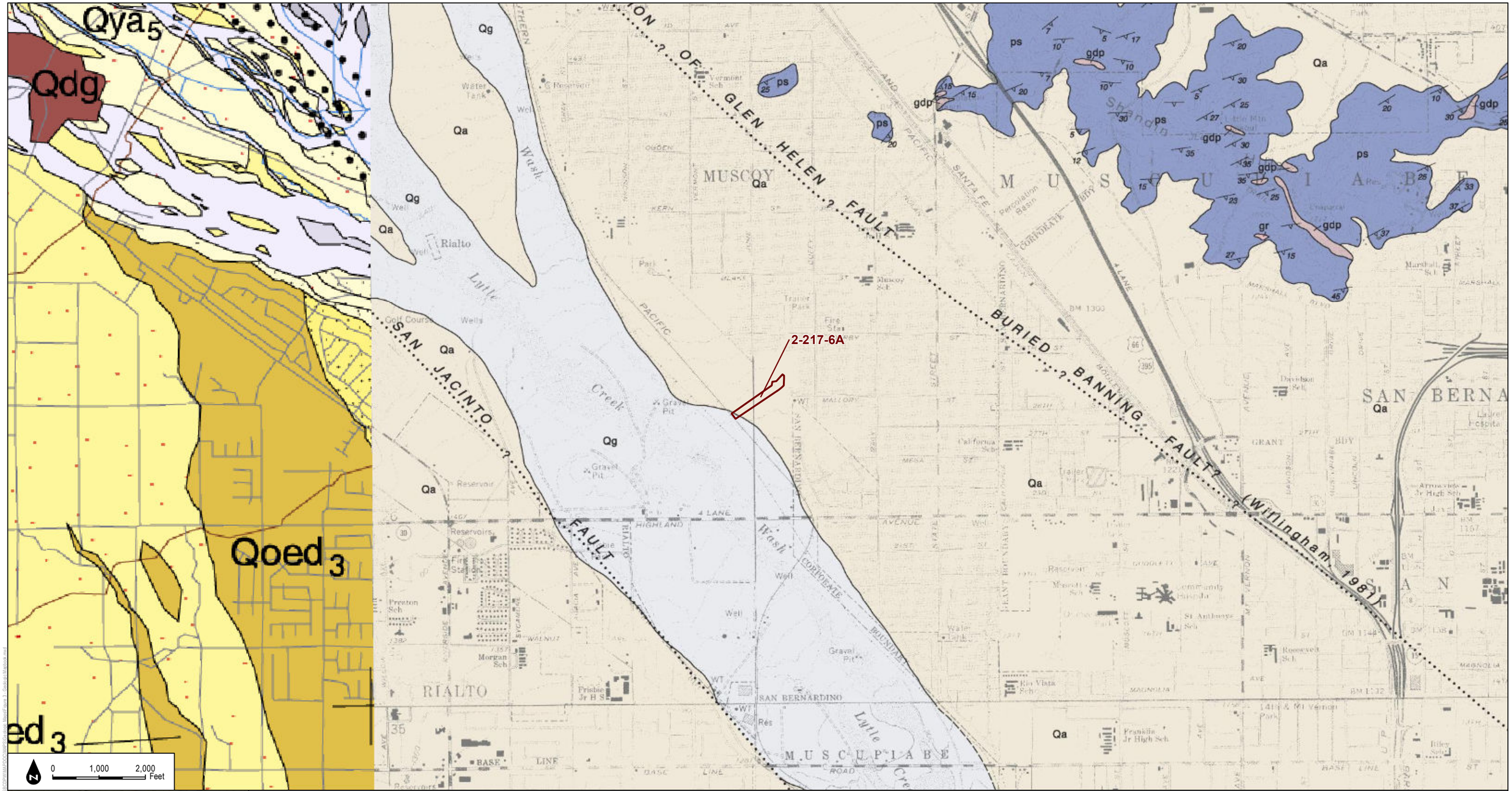
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

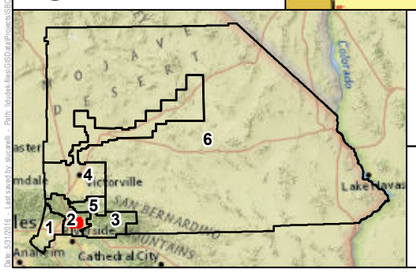
MAP 111

Zone 2 - Macy Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

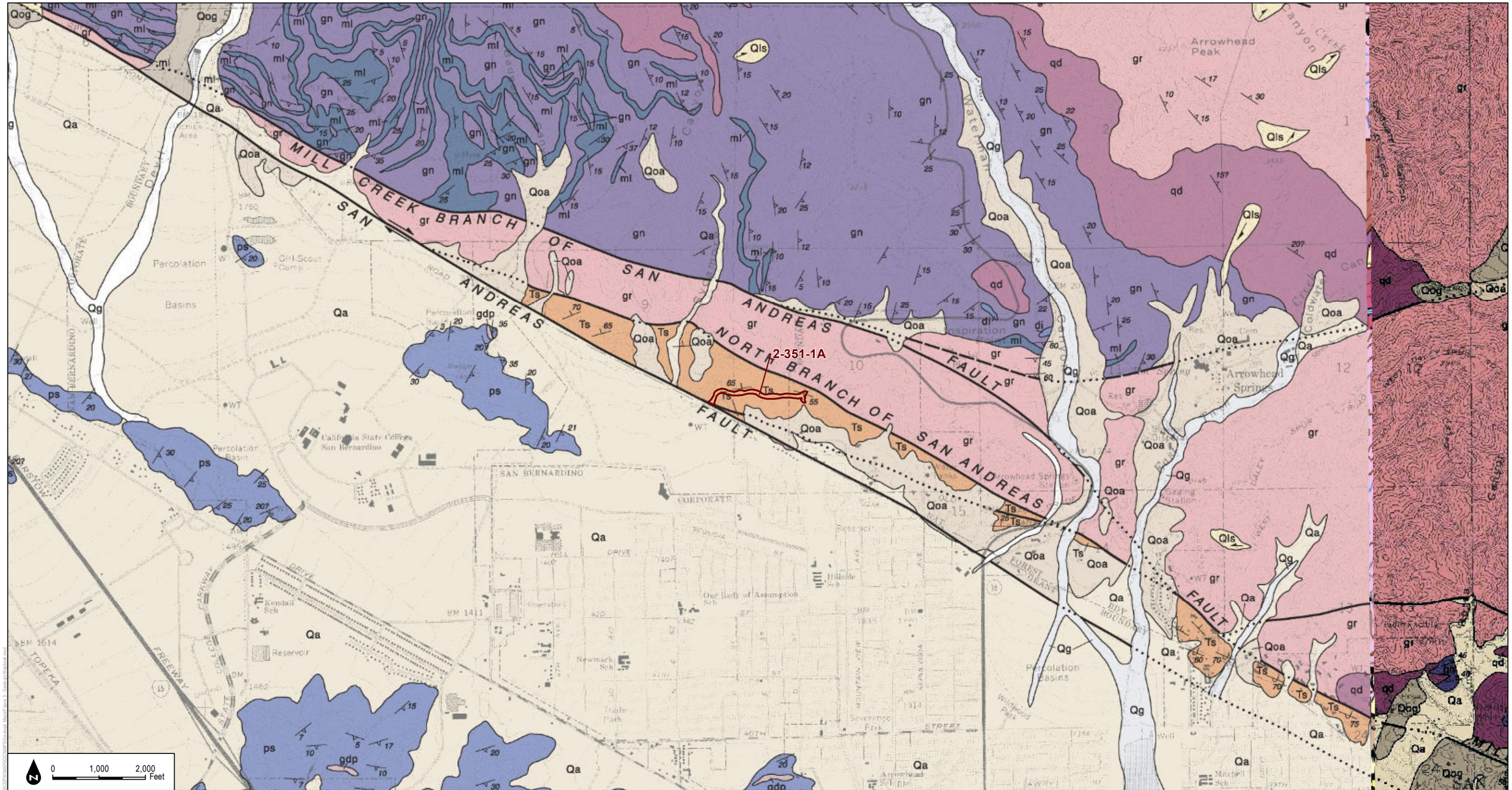
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

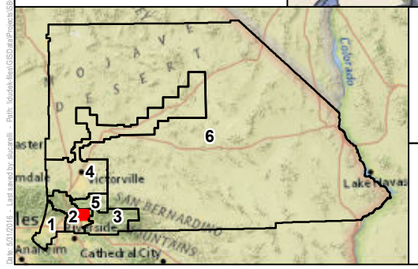
MAP 112

Zone 2 - Macy Storm Drain

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

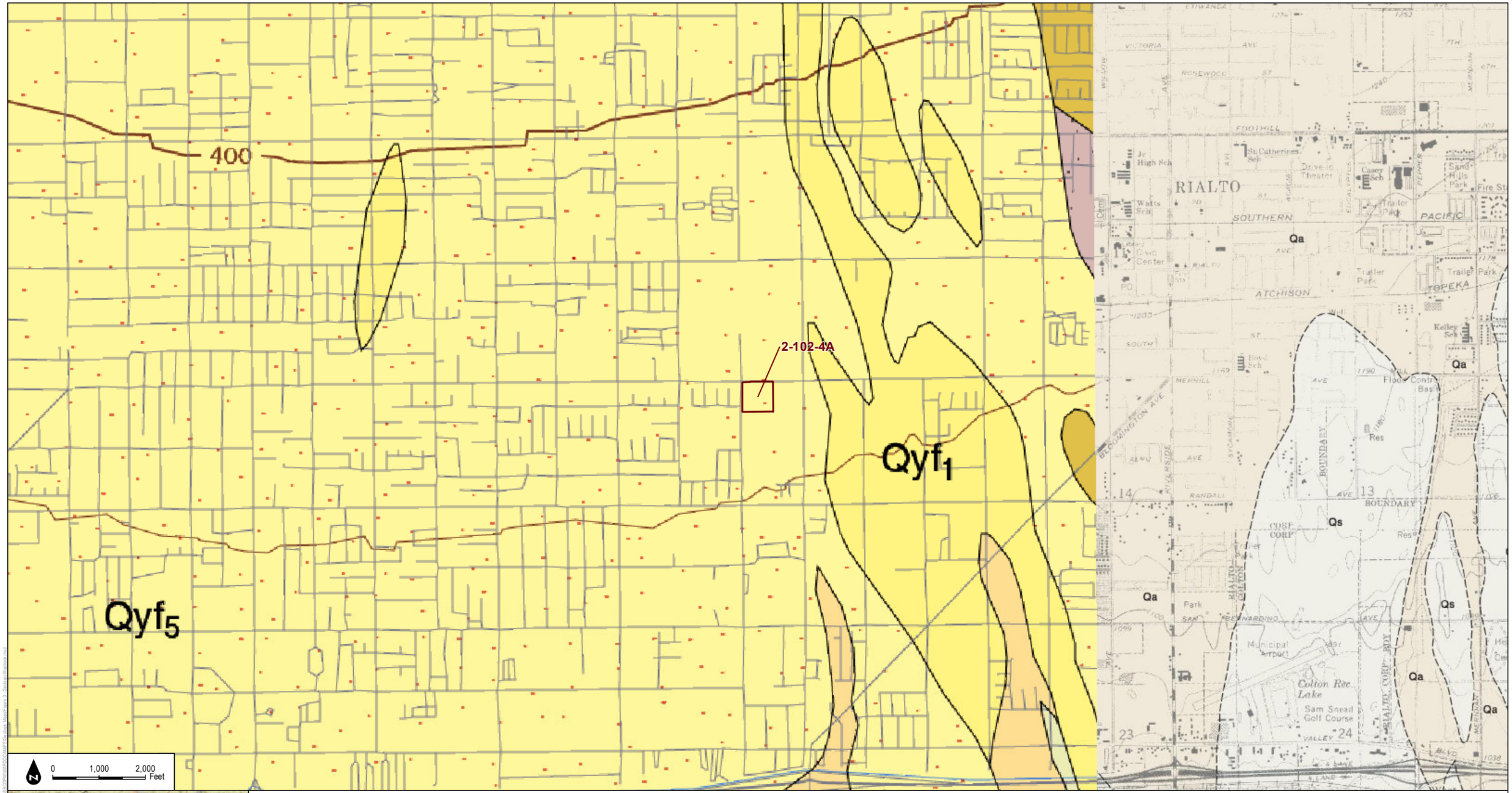
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

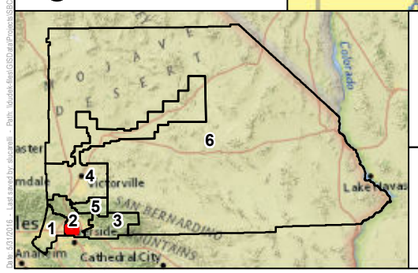
MAP 113

Zone 2 - McQuiddy-Severance Diversion Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

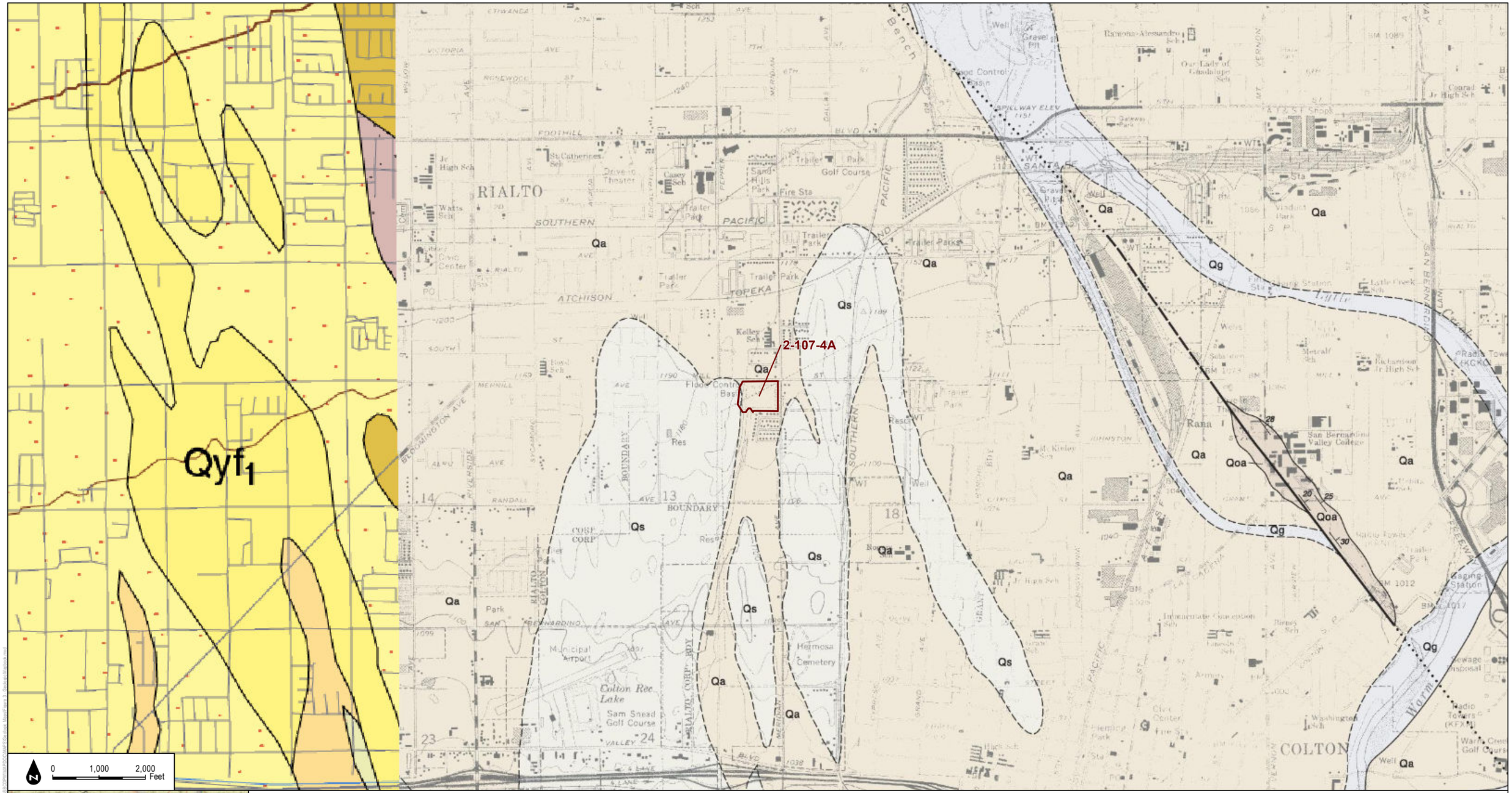
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

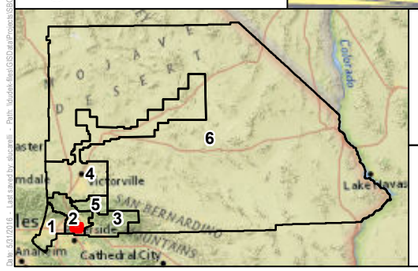
MAP 114

Zone 2 - Merrill Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

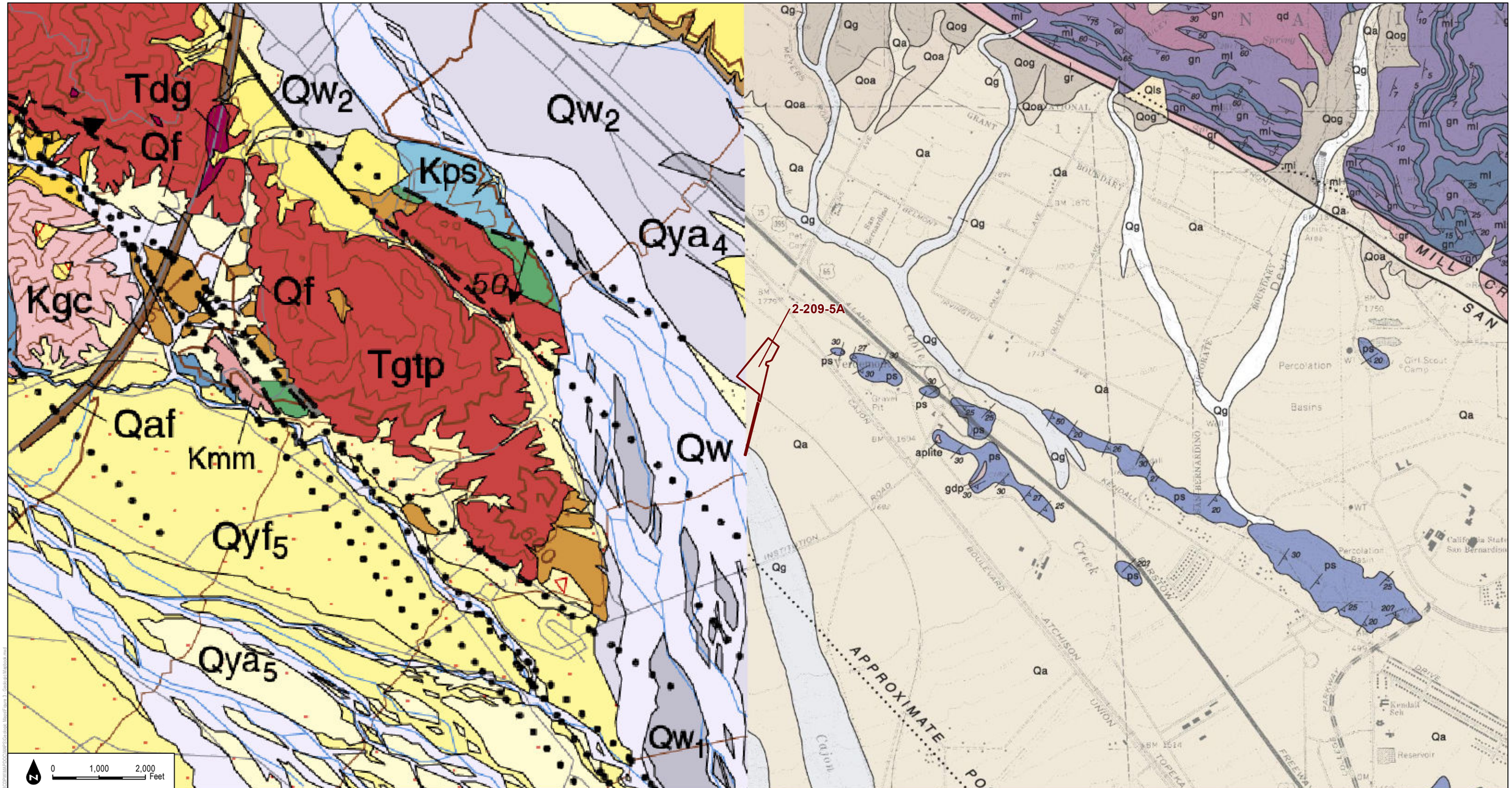
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

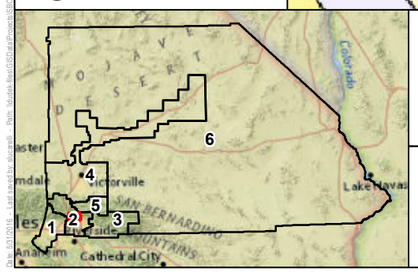
San Bernardino Department of Public Works

MAP 115

Zone 2 - Mill Basin

Geologic Map





Redbook Polygons

1:24,000

DUDEK

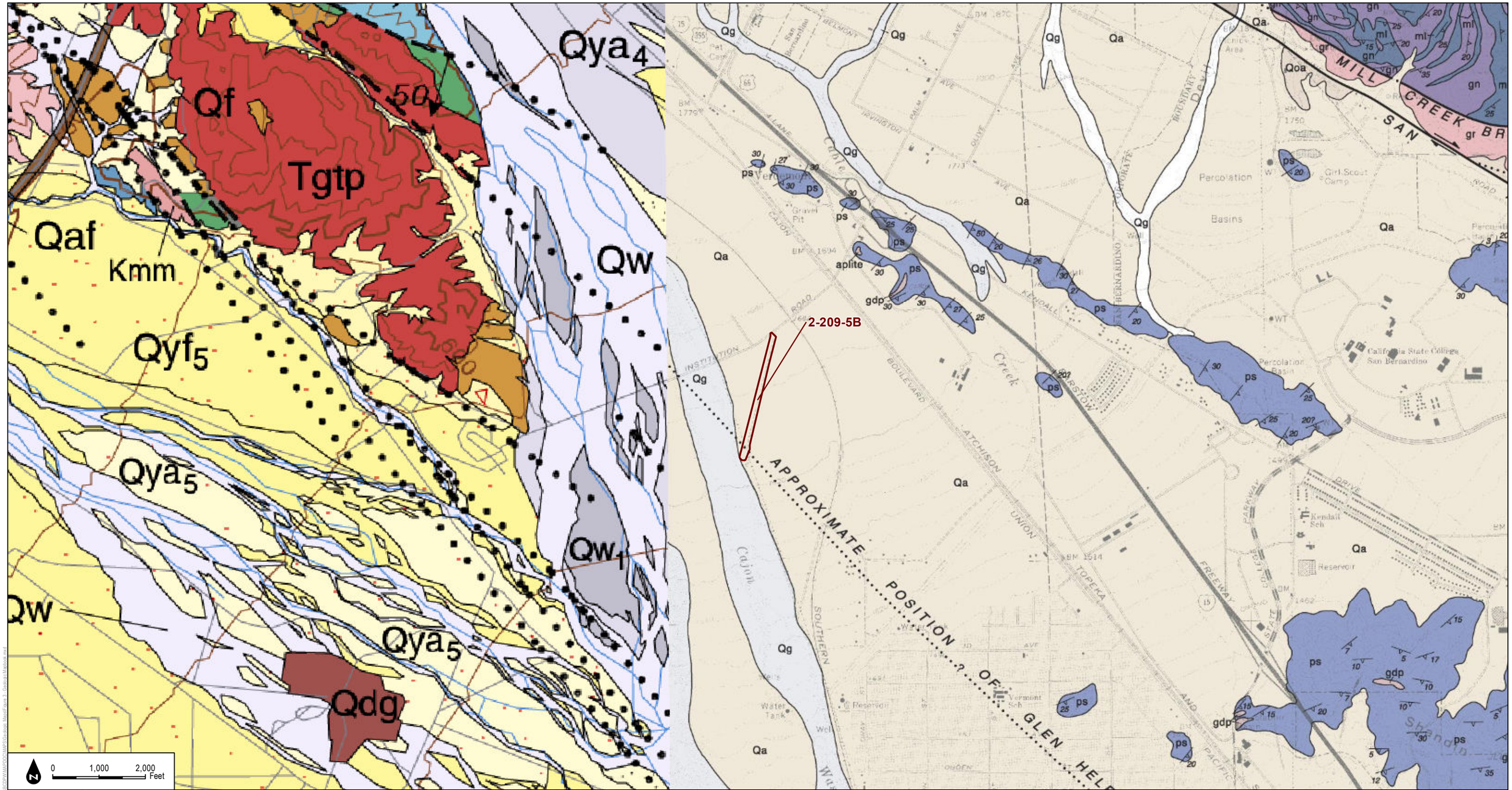
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

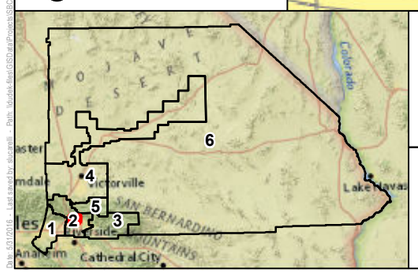
San Bernardino Department of Public Works

MAP 116

Zone 2 - Muscoy Groin #1, COE

Geologic Map





Redbook Polygons

1:24,000

DUDEK

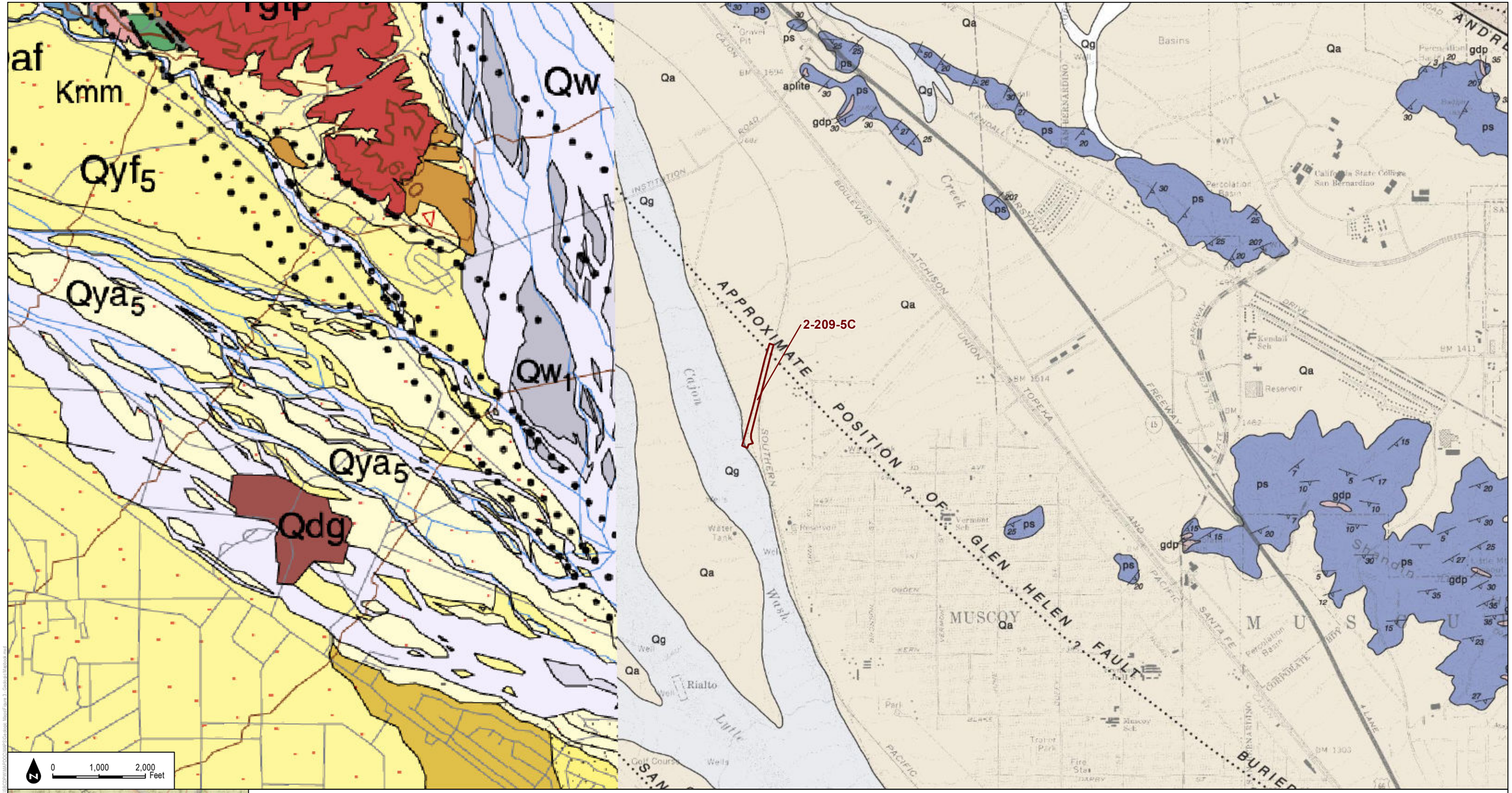
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

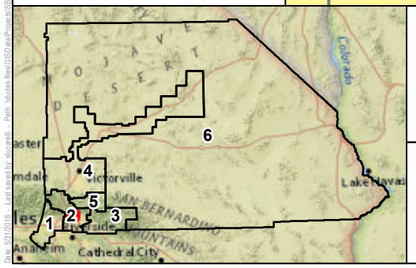
MAP 117

Zone 2 - Muscoy Groin #2, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

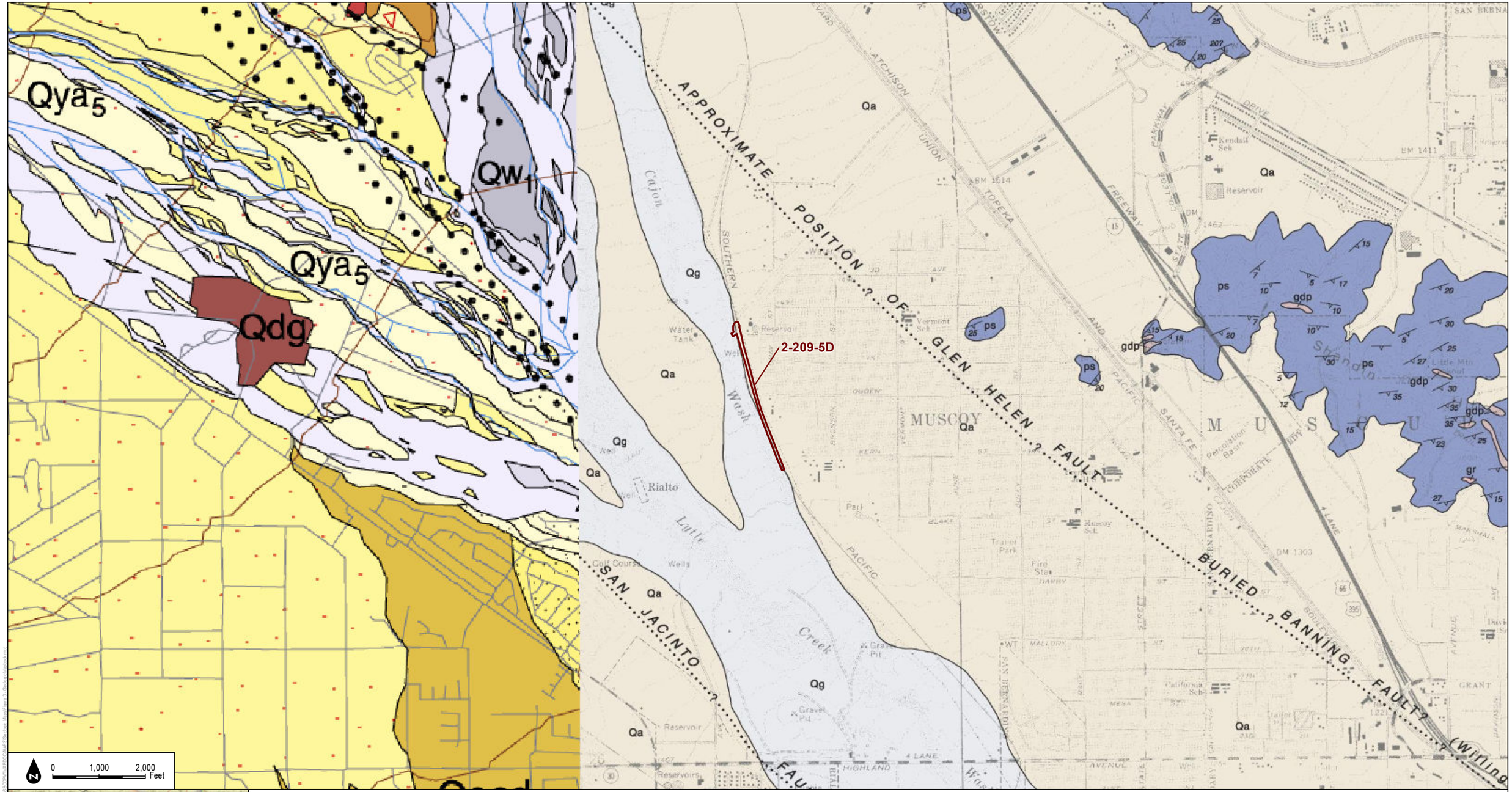
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

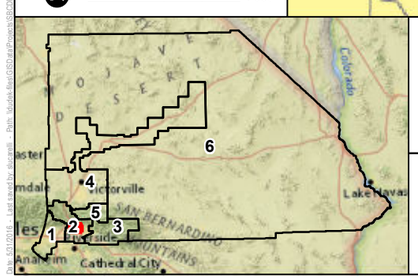
MAP 118

Zone 2 - Muscoy Groin #3, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

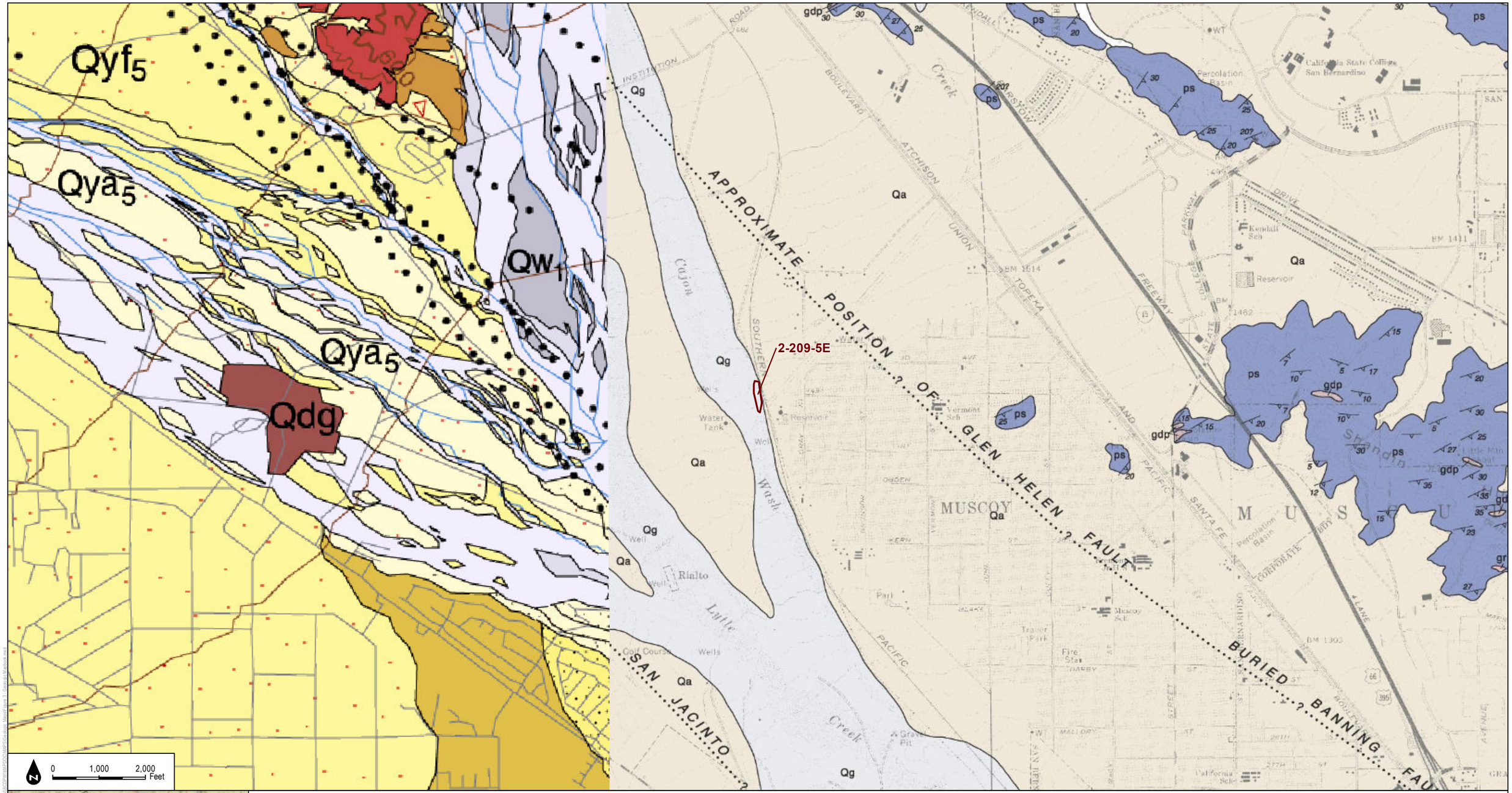
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

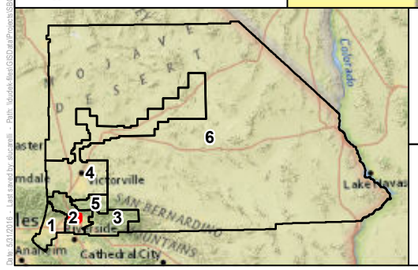
MAP 119

Zone 2 - Muscoy Groin #4, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

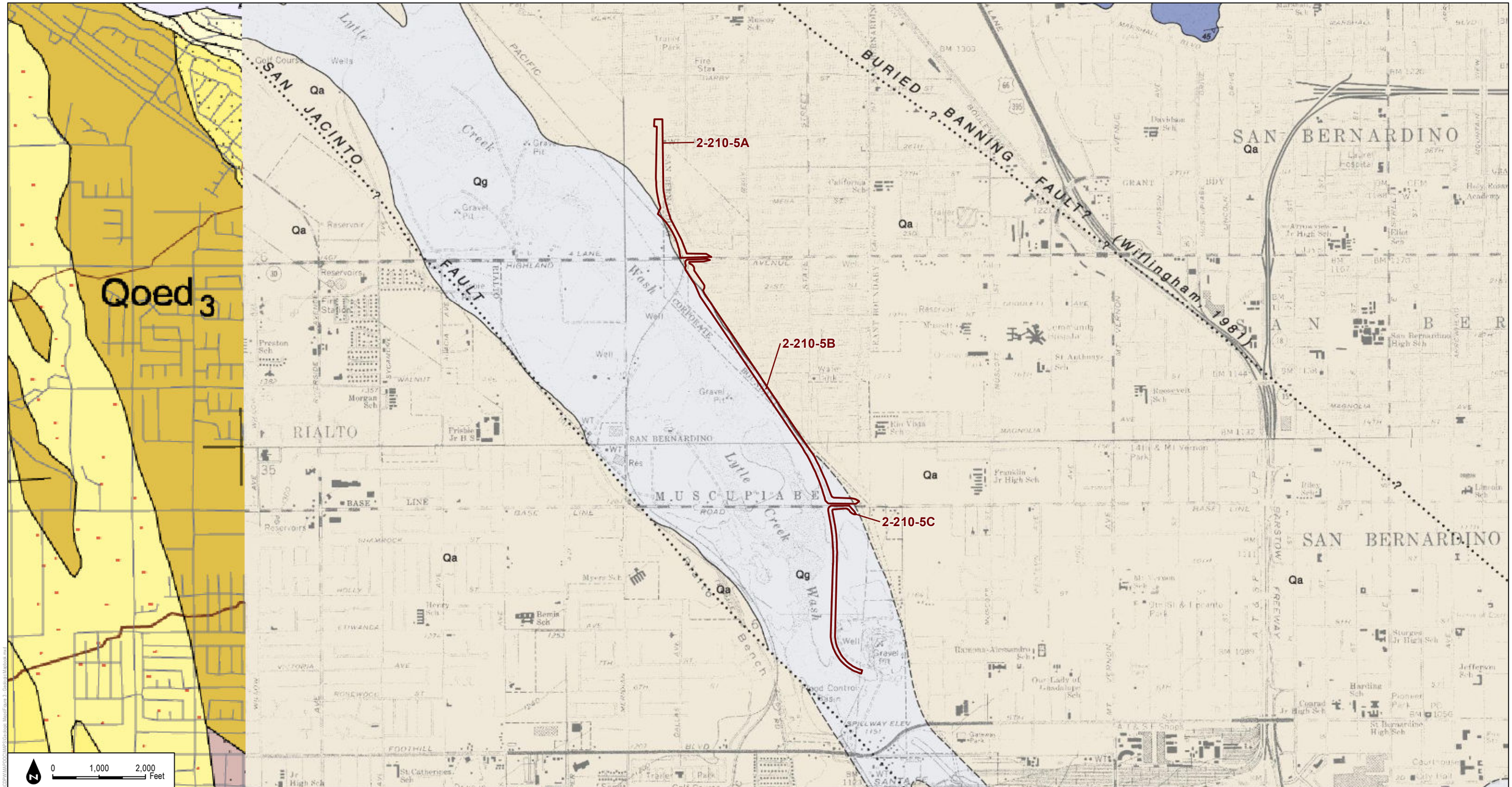
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

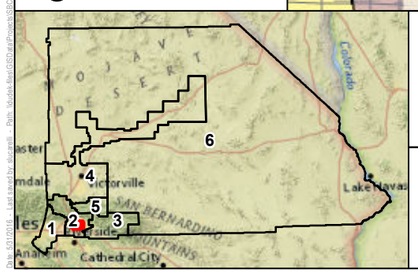
MAP 120

Zone 2 - Muscoy Groin #5, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

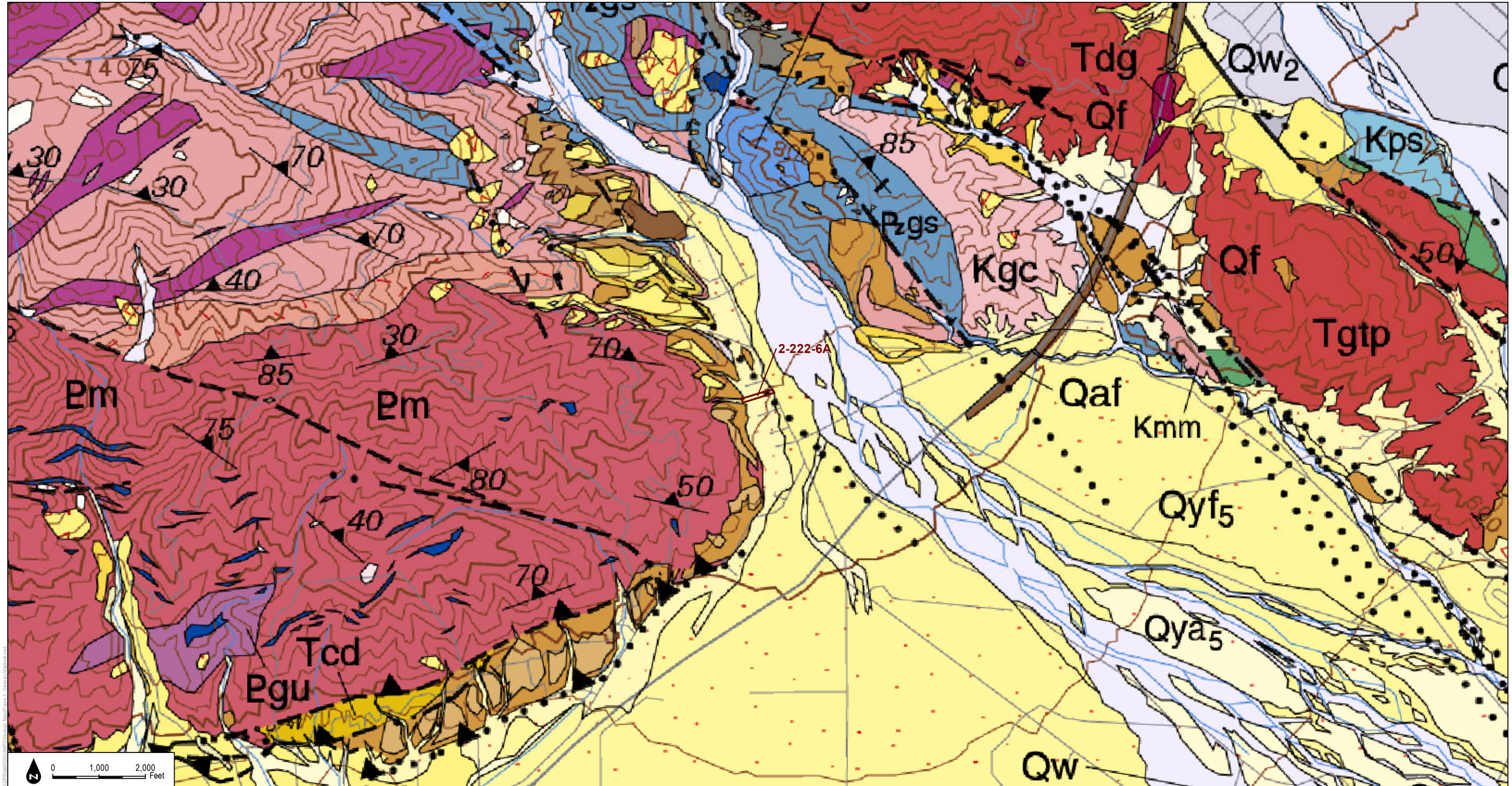
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

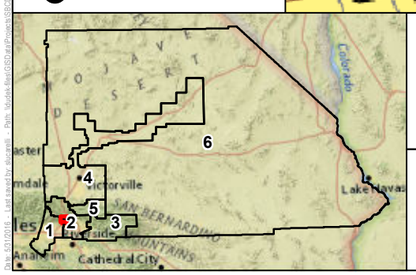
MAP 121

Zone 2 - Muscoy Levee, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

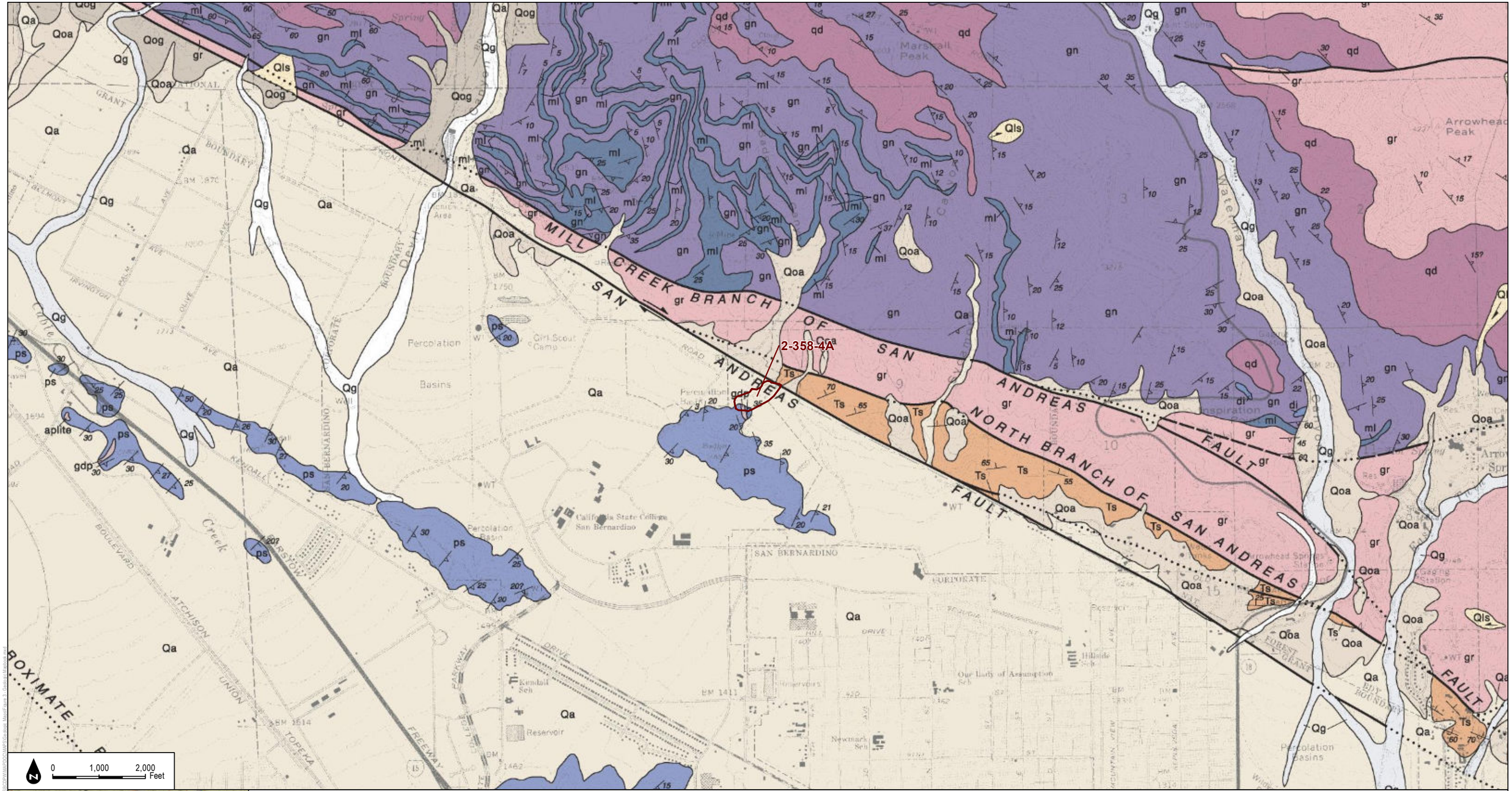
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

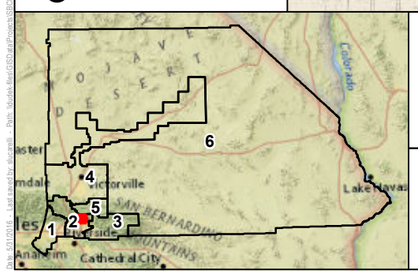
MAP 122

Zone 2 - Nealey's Corner Drain

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

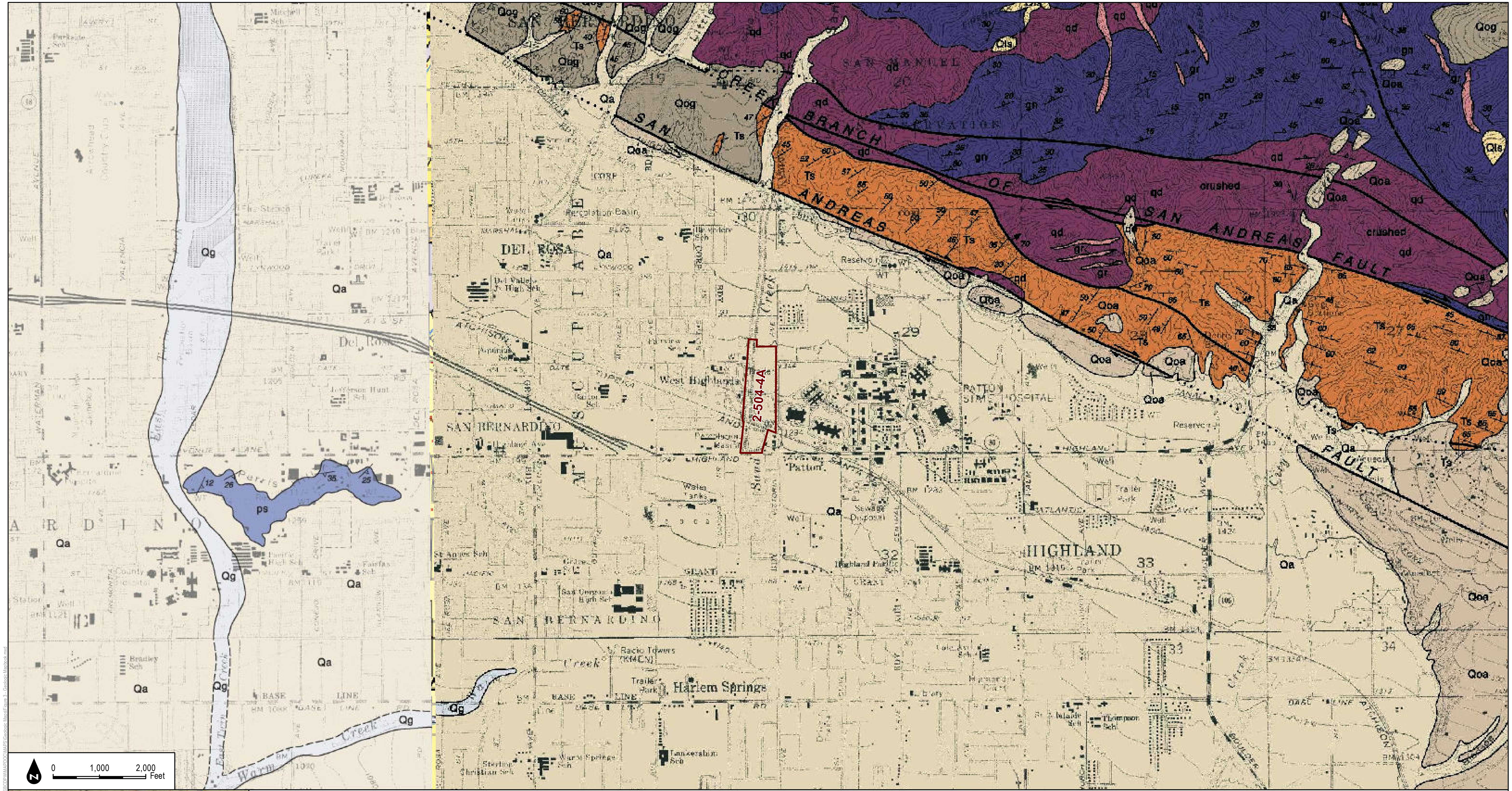
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

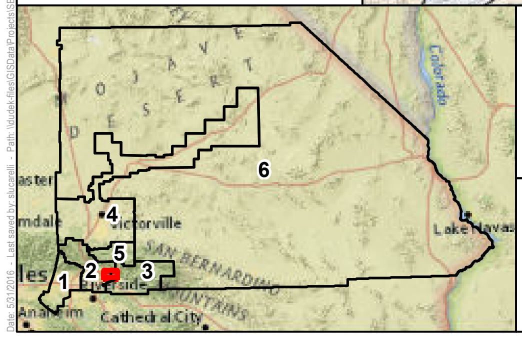
San Bernardino Department of Public Works

MAP 123

Zone 2 - North Badger Basin

Geologic Map





Redbook Polygons

1:24,000

DUDEK

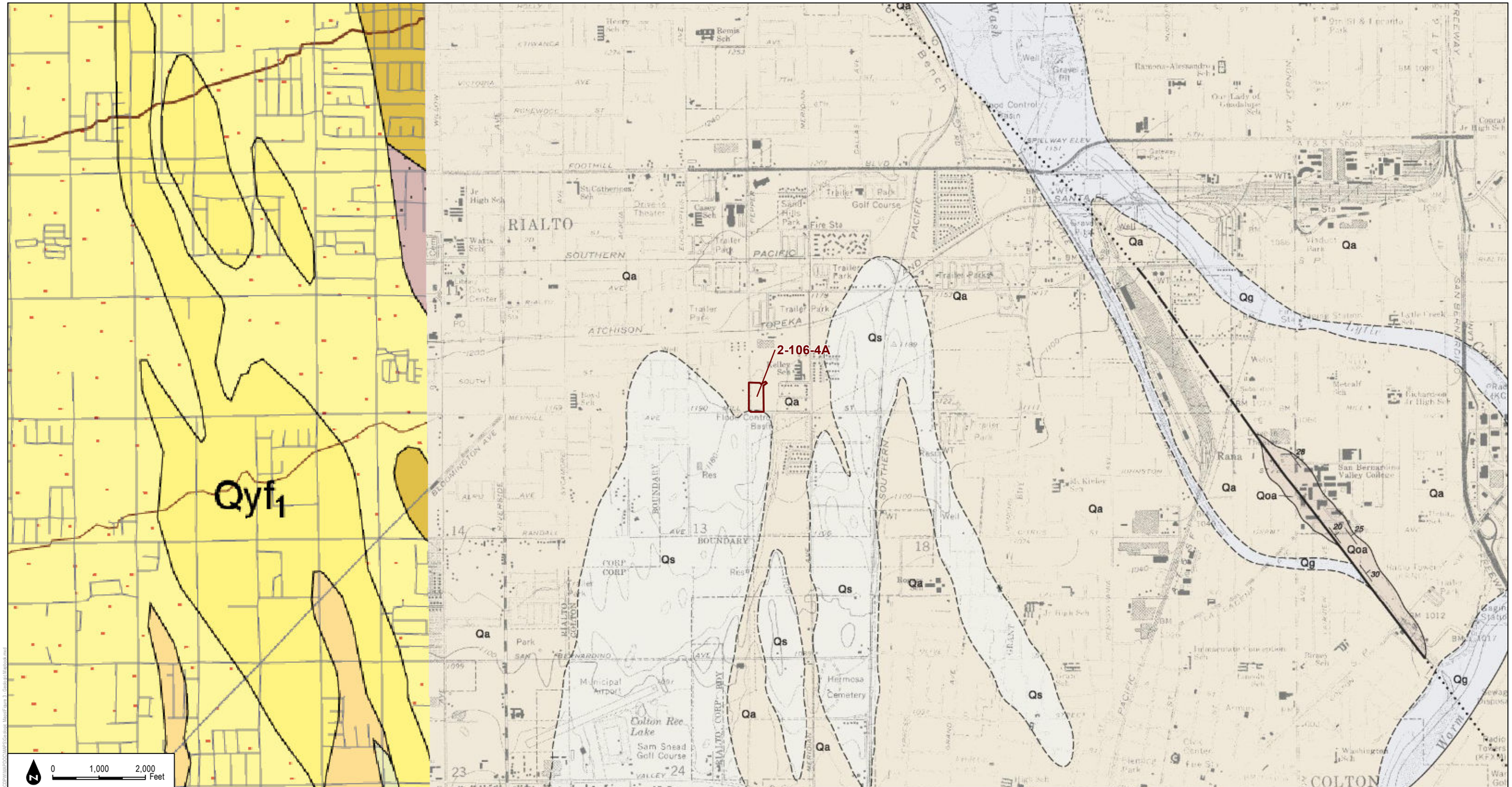
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

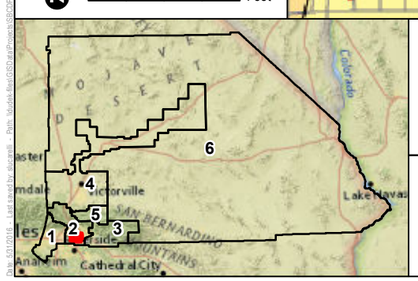
San Bernardino Department of Public Works

MAP 124

Zone 2 - Patton Basin

Geologic Map





Redbook Polygons

1:24,000

DUDEK

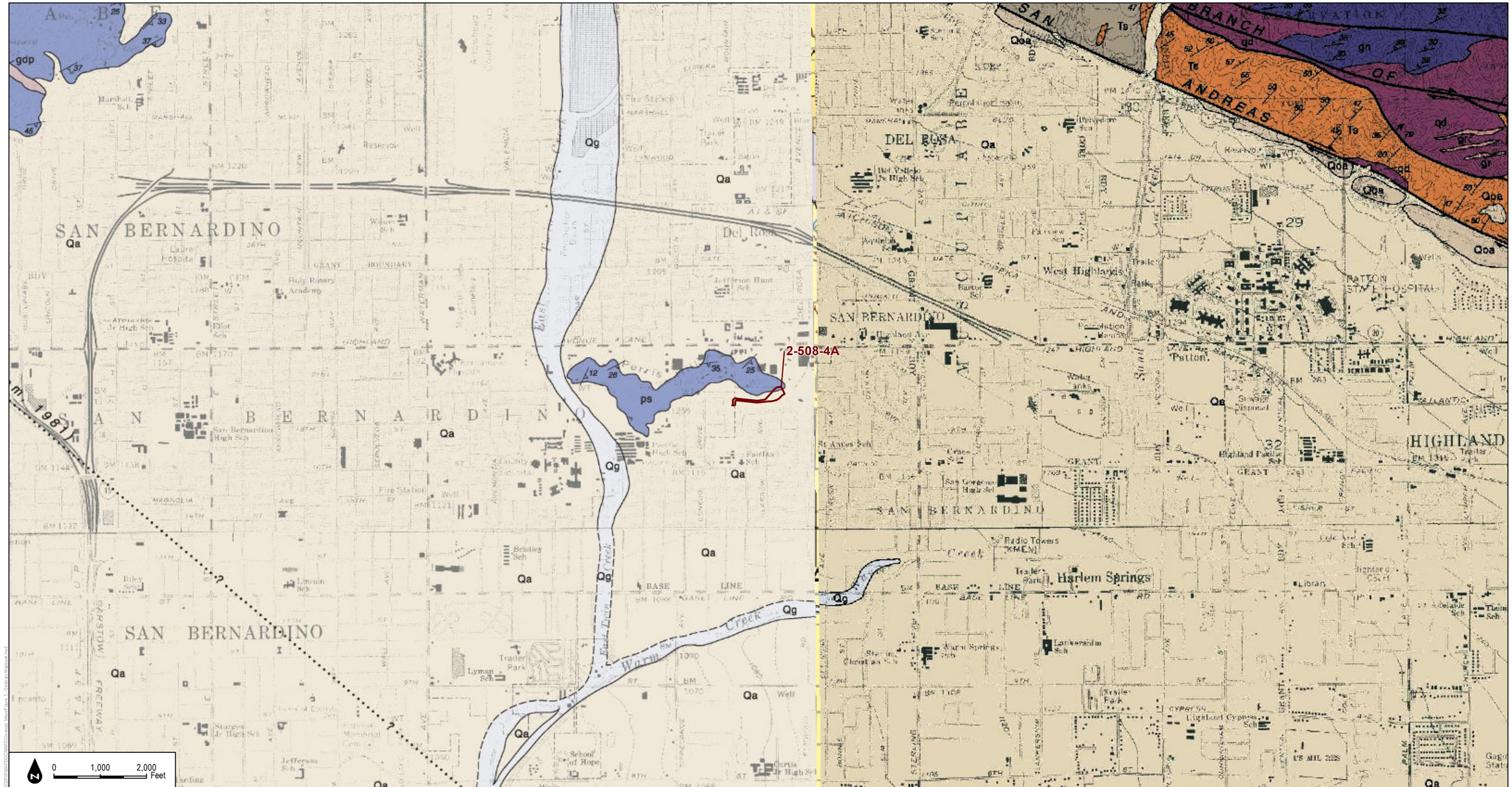
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

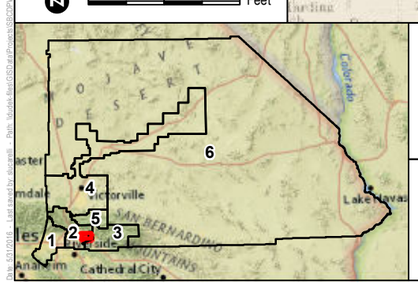
MAP 125

Zone 2 - Pepper Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

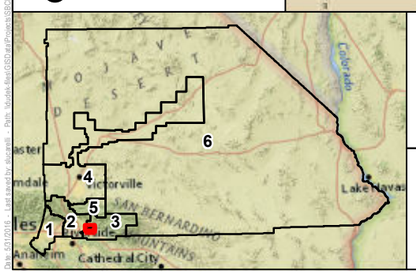
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 126

Zone 2 - Perris Hill Basin

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

1:24,000

DUDEK

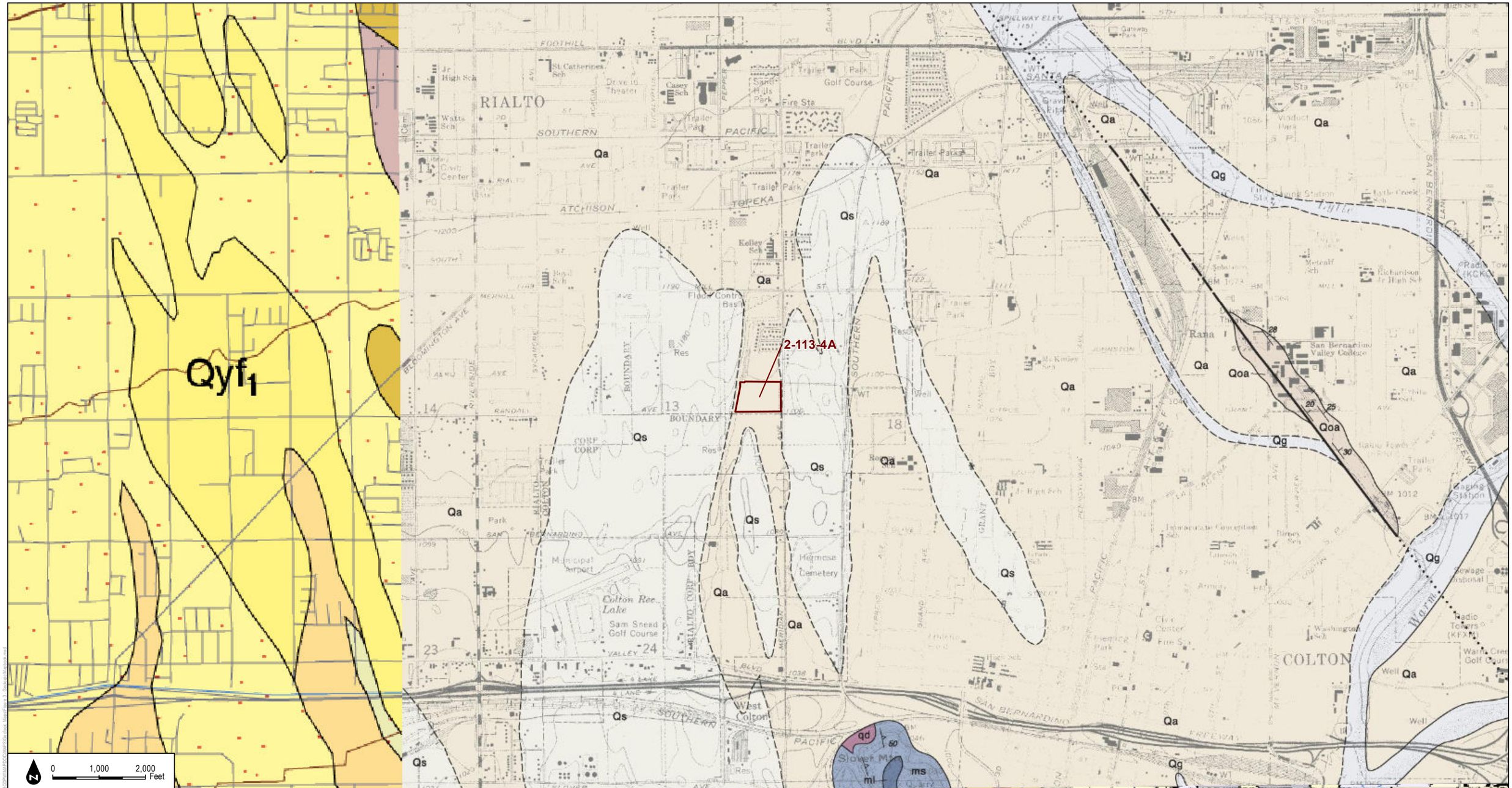
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

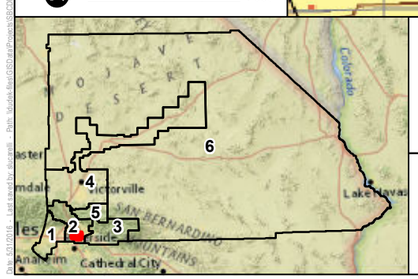
MAP 127

Zone 2 - Plunge Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

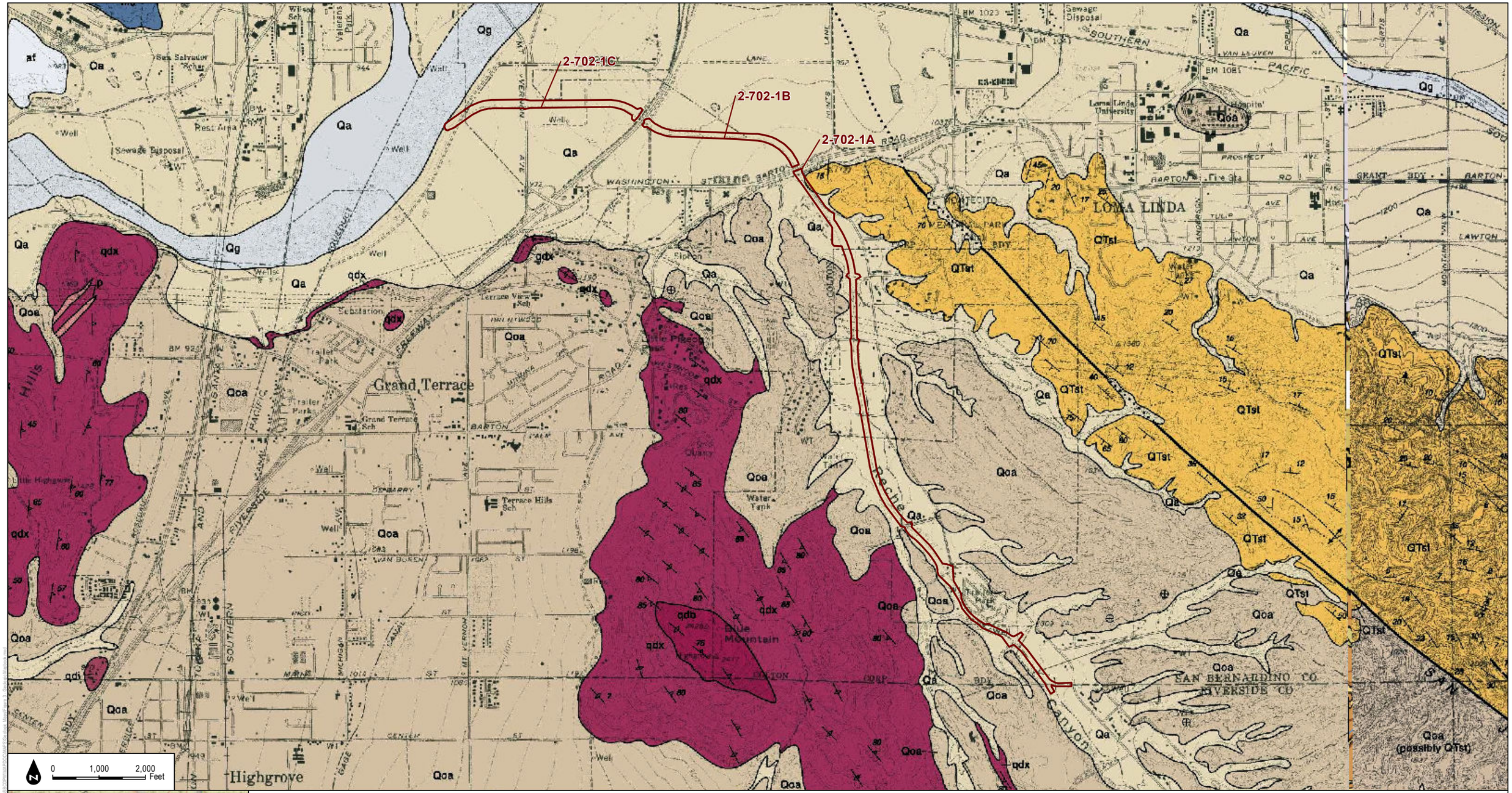
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

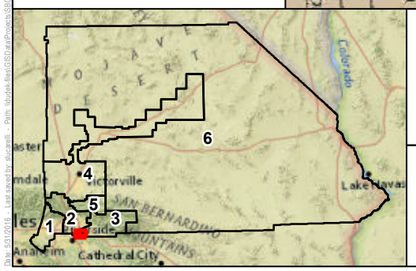
MAP 128

Zone 2 - Randall Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

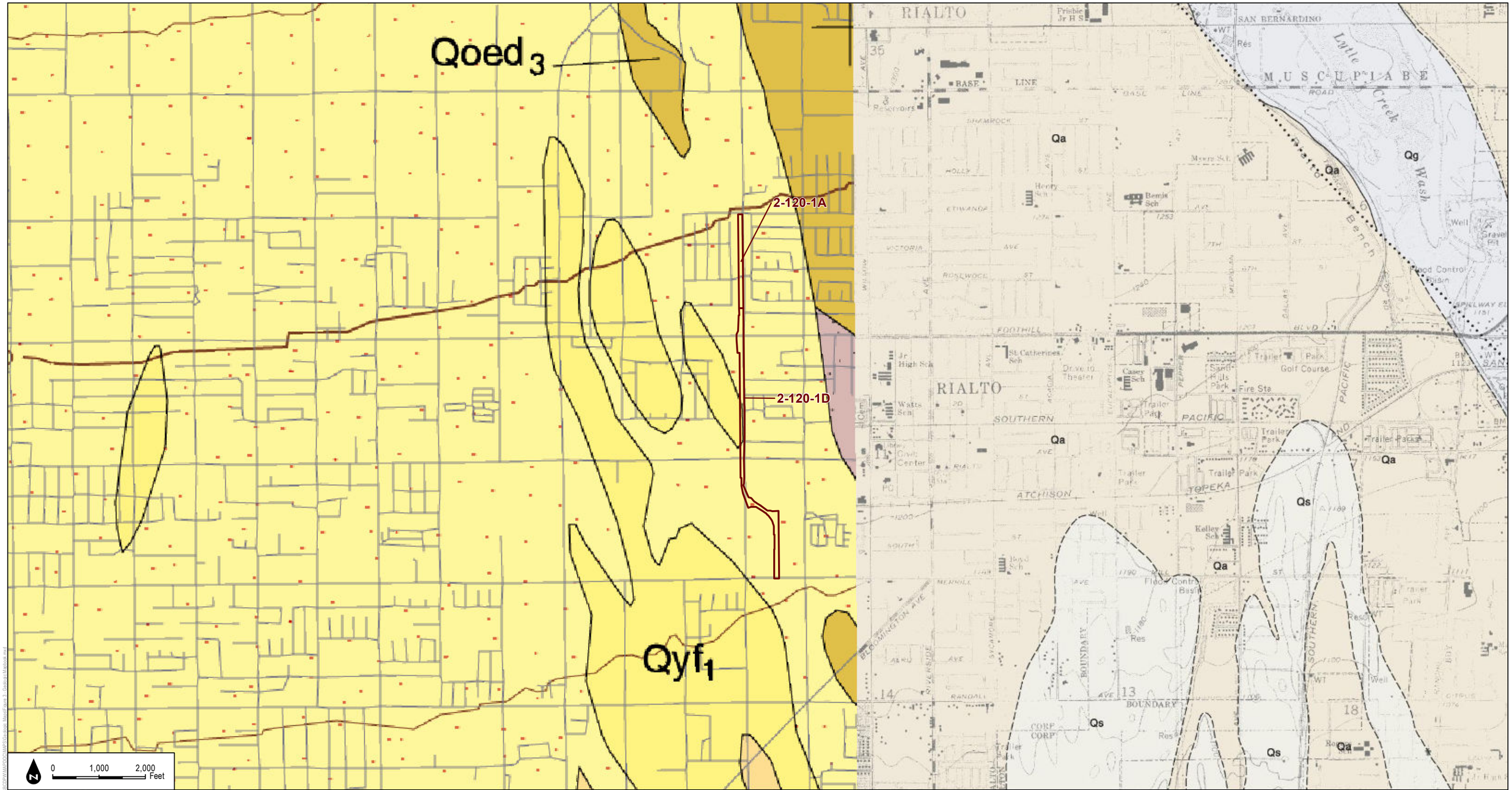
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

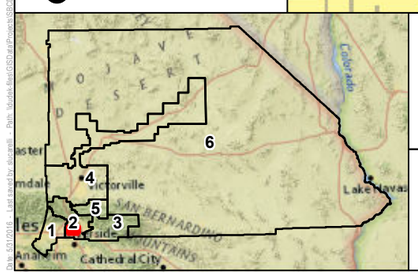
MAP 129

Zone 2 - Reche Canyon Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

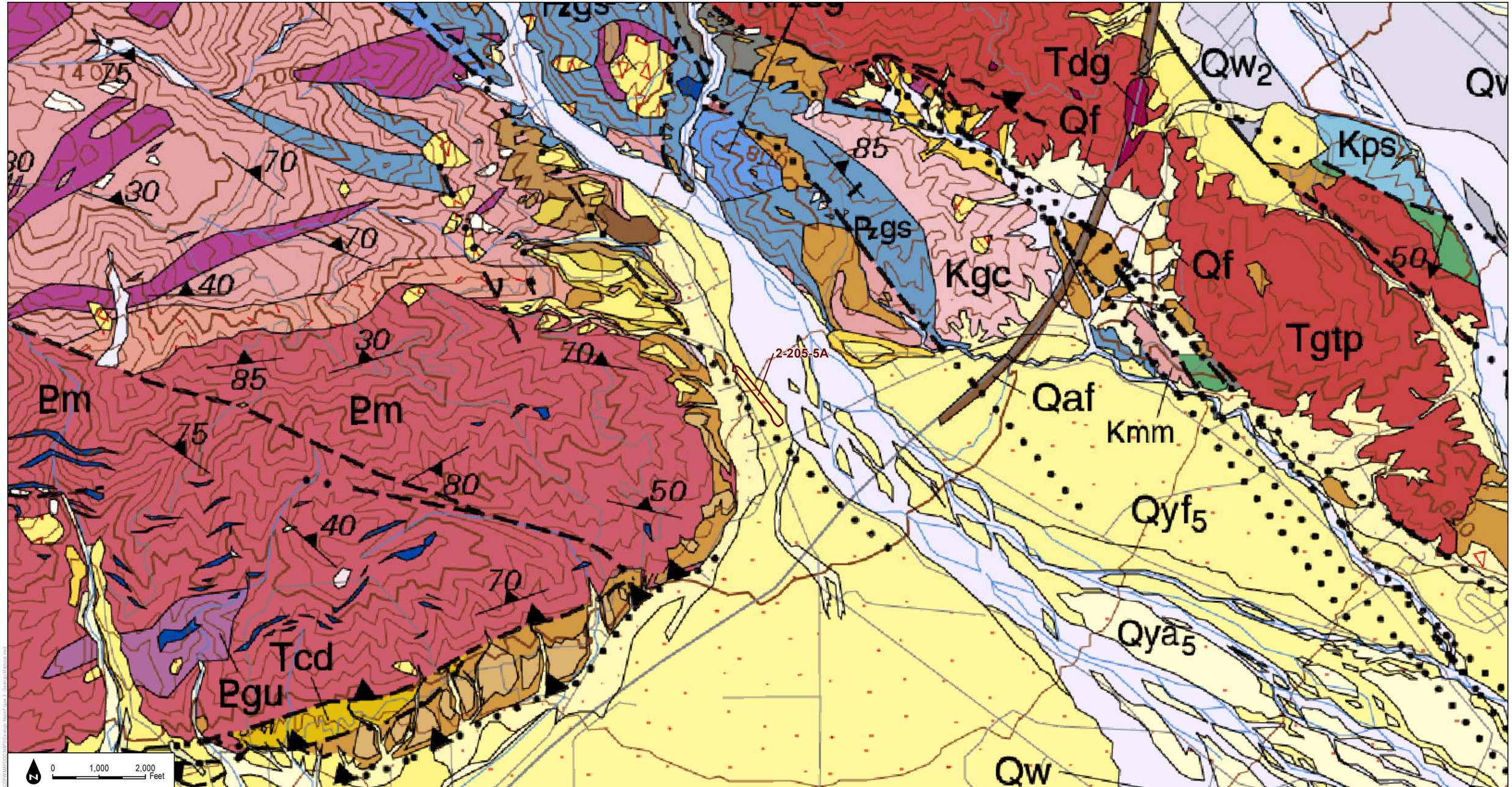
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

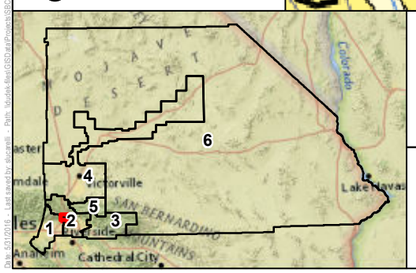
MAP 130

Zone 2 - Rialto Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

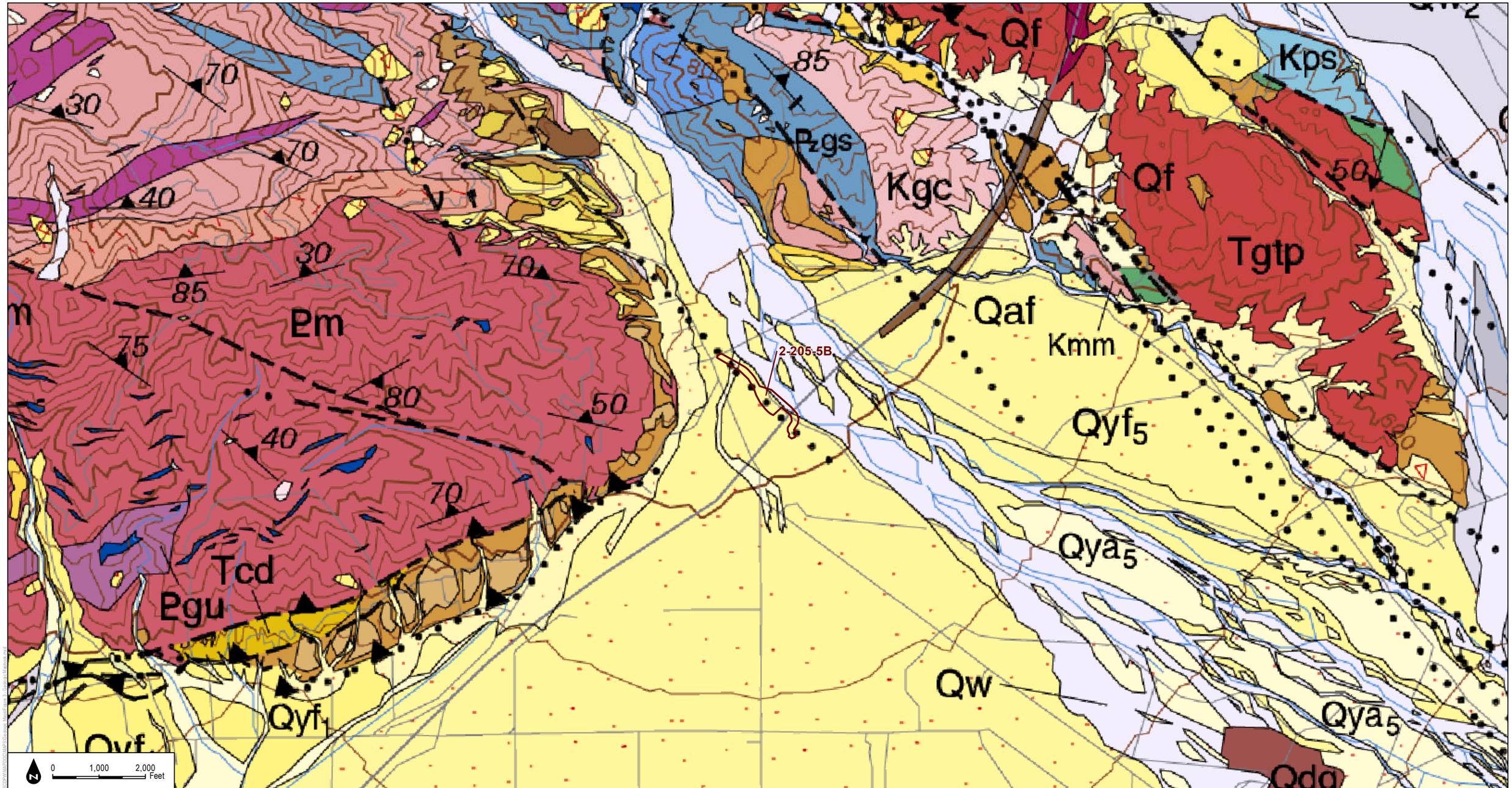
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

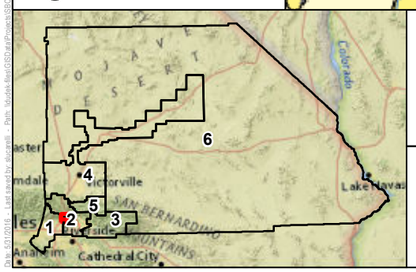
MAP 131

Zone 2 - Riverside Groin #1, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

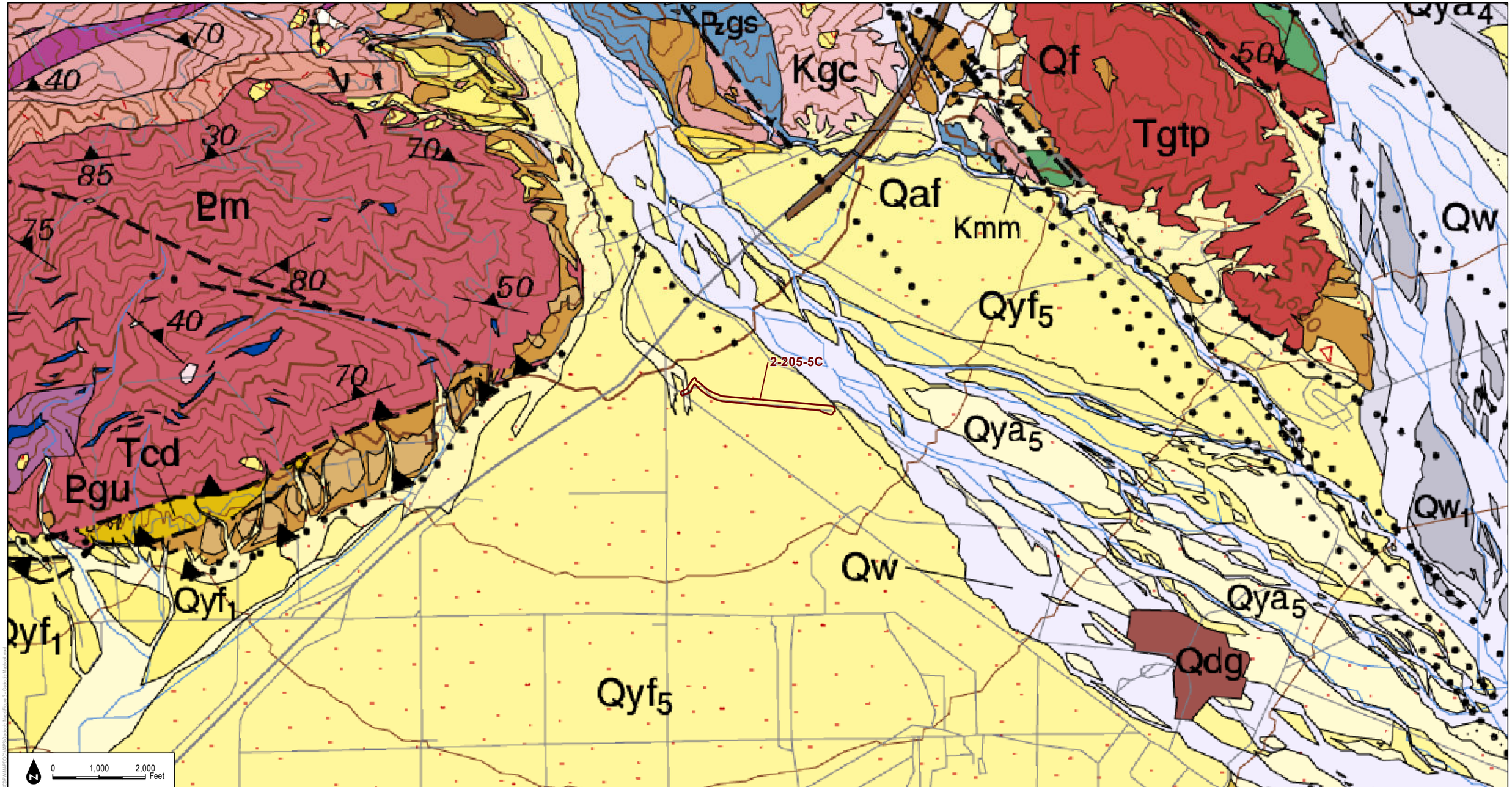
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

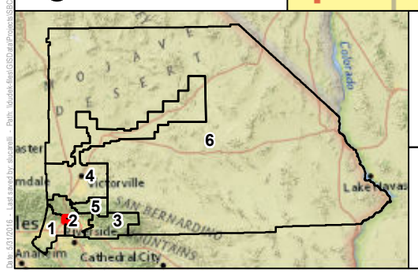
MAP 132

Zone 2 - Riverside Groin #2, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

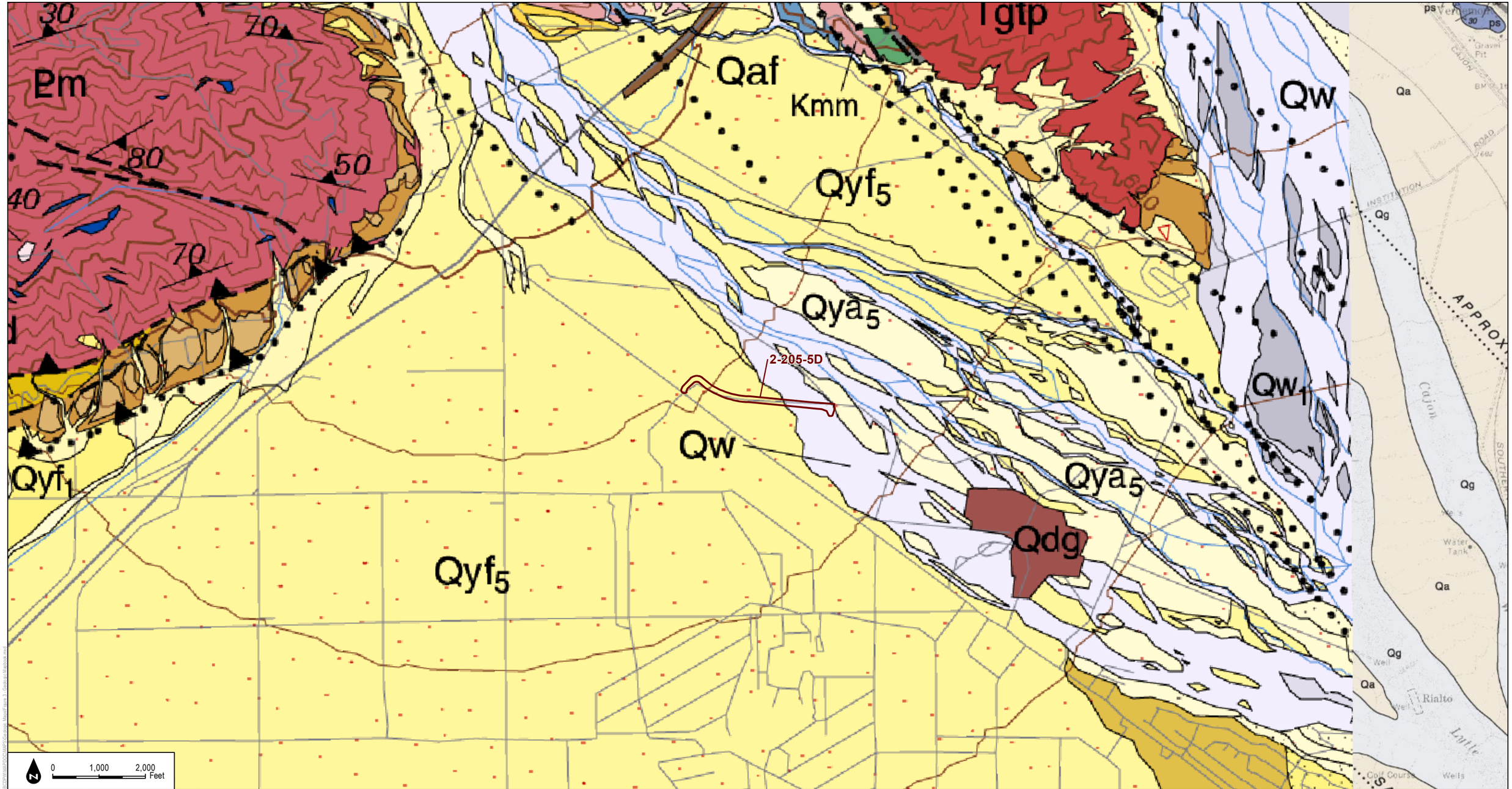
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

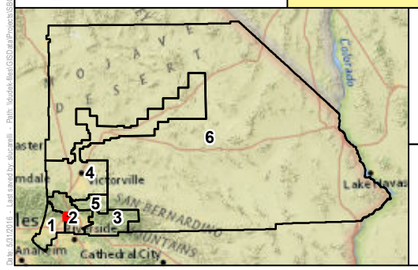
MAP 133

Zone 2 - Riverside Groin #3, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

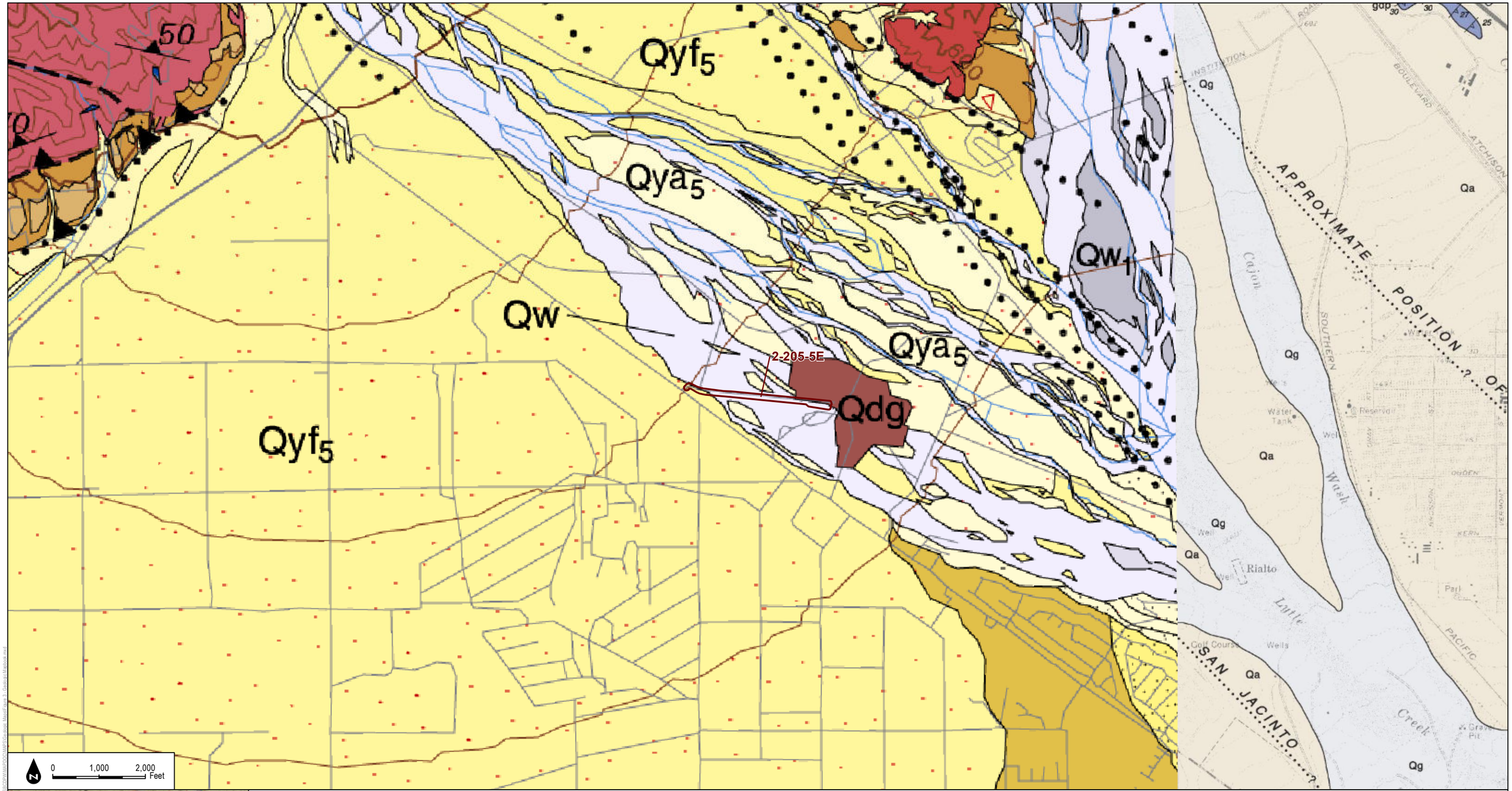
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

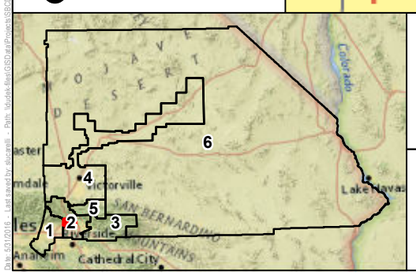
MAP 134

Zone 2 - Riverside Groin #4, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

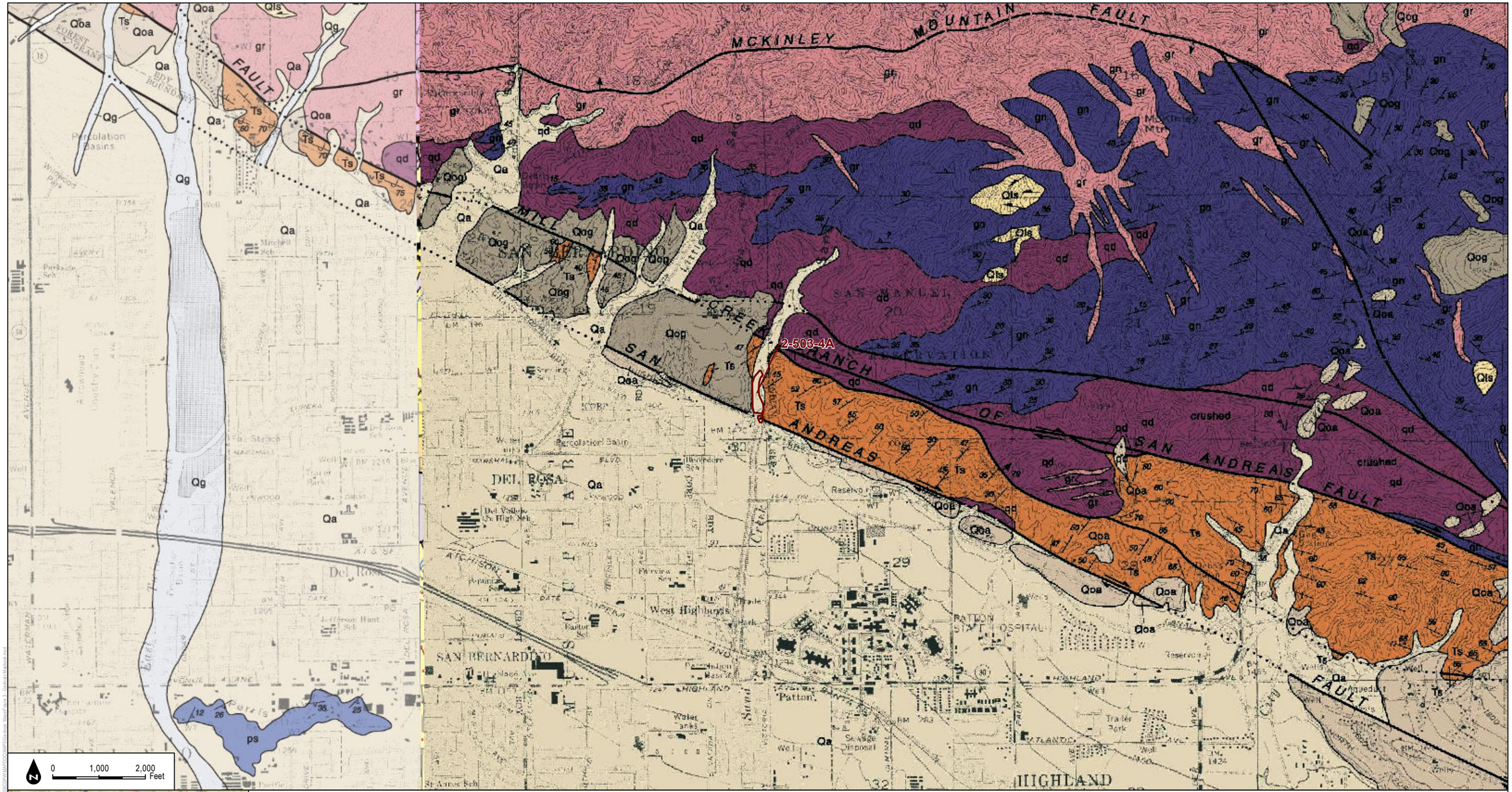
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

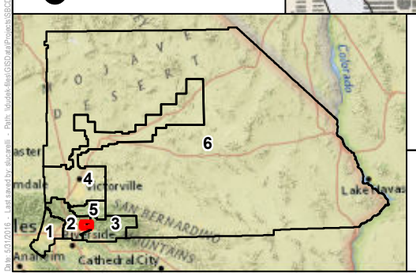
MAP 135

Zone 2 - Riverside Groin #5, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

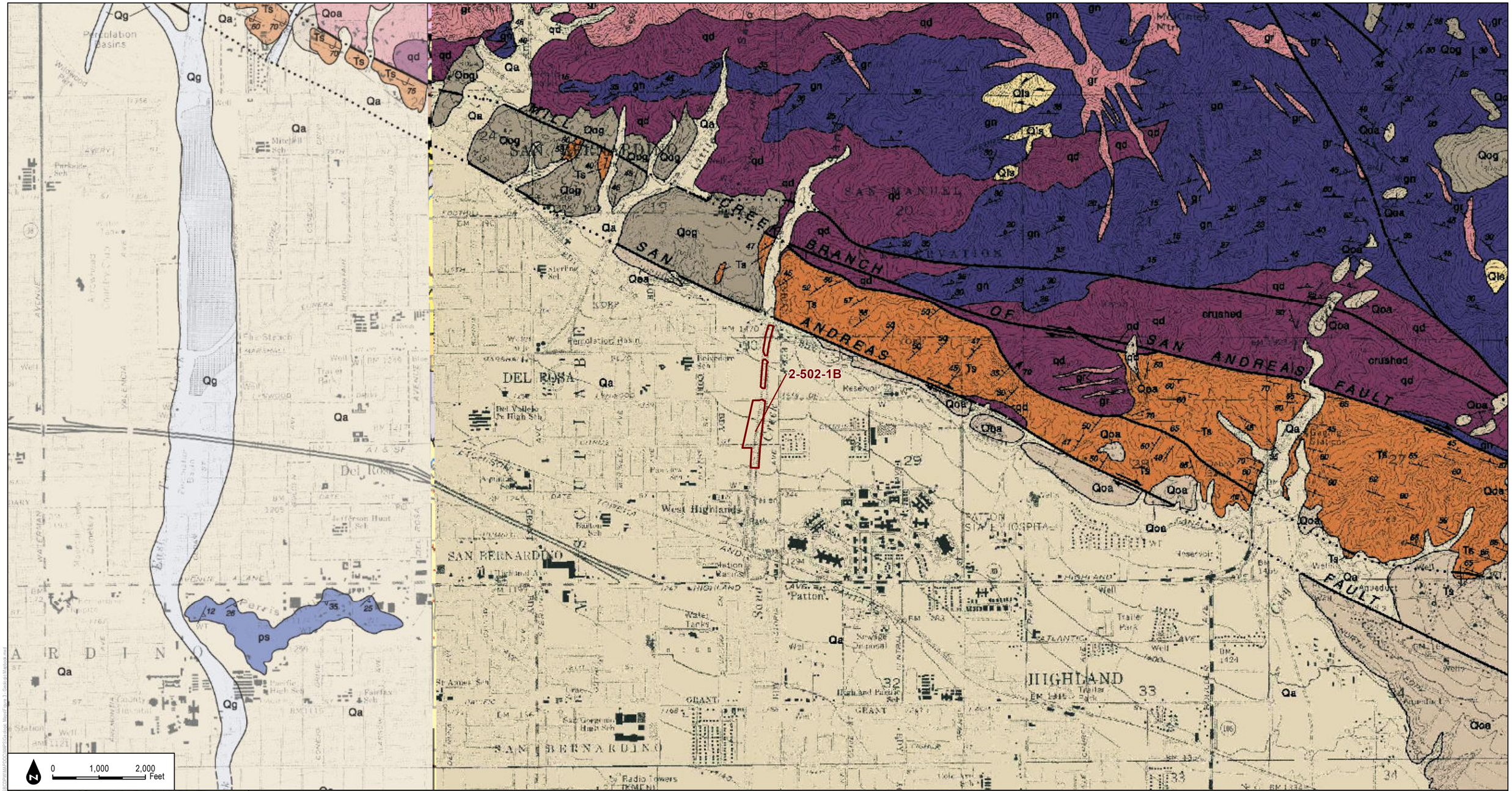
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

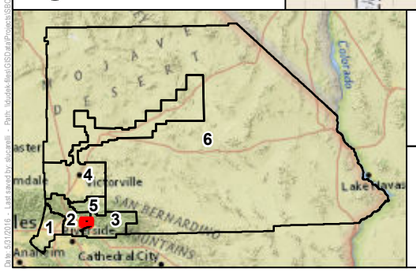
MAP 136

Zone 2 - Sand Canyon Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

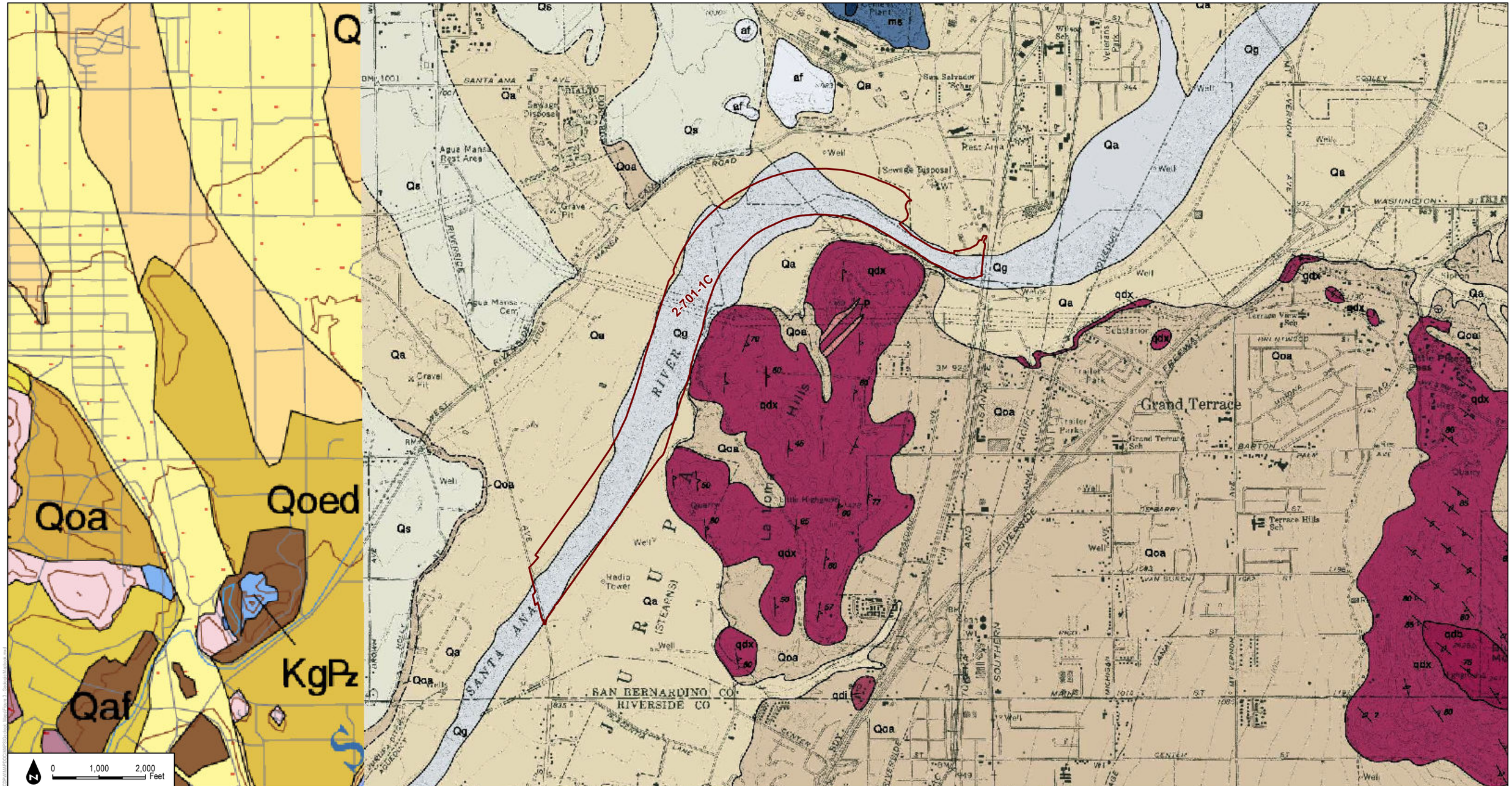
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

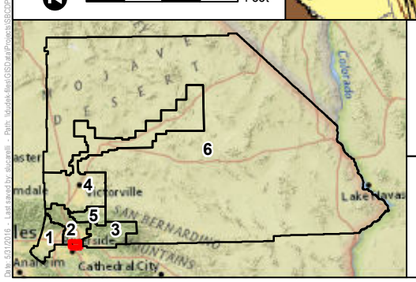
MAP 137

Zone 2 - Sand Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

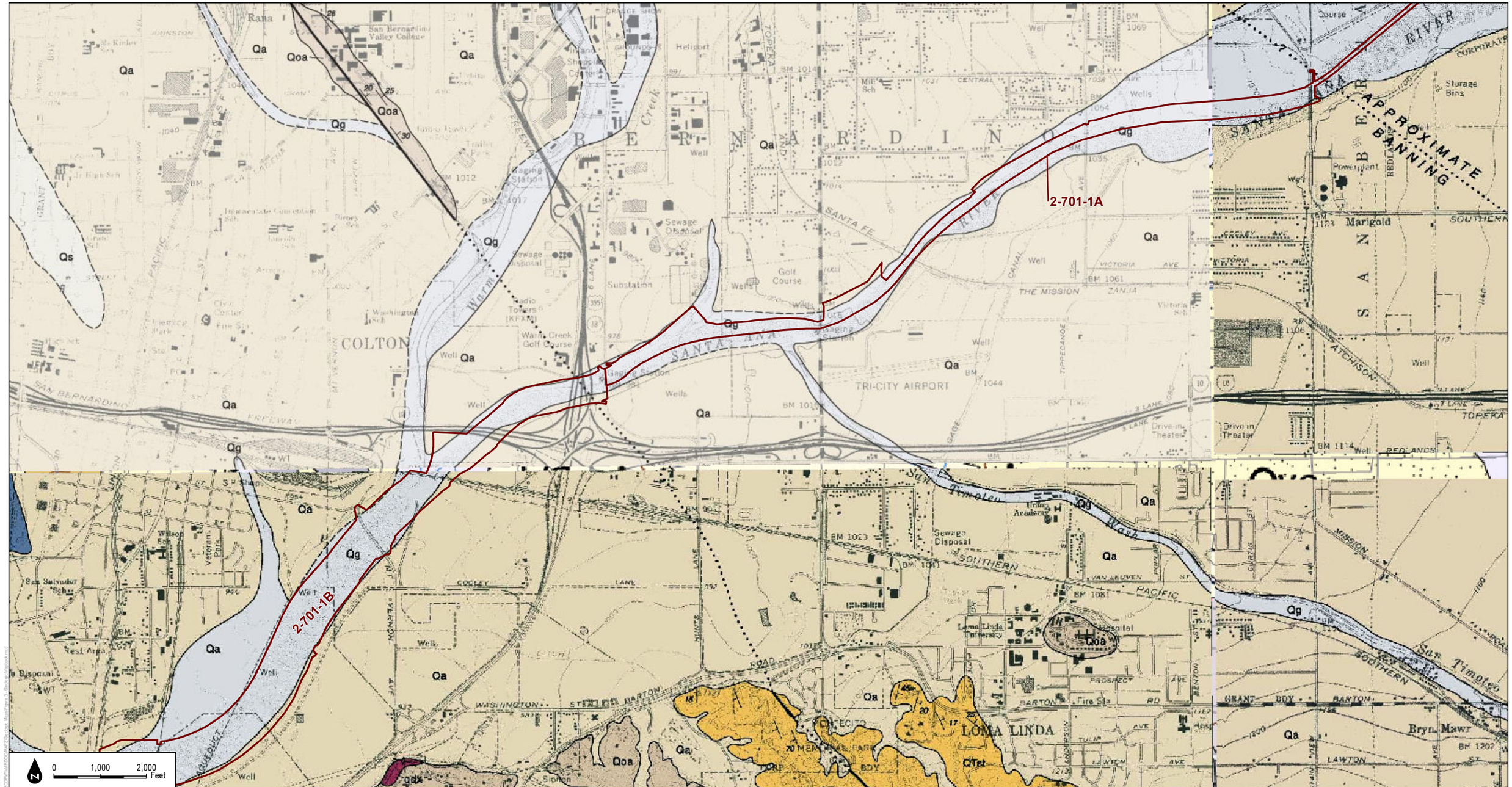
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

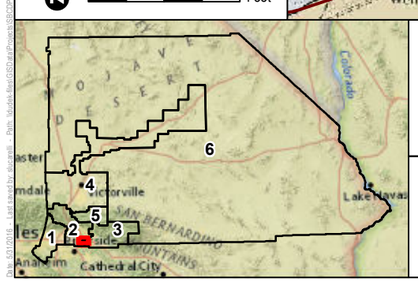
MAP 138

Zone 2 - Santa Ana River

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

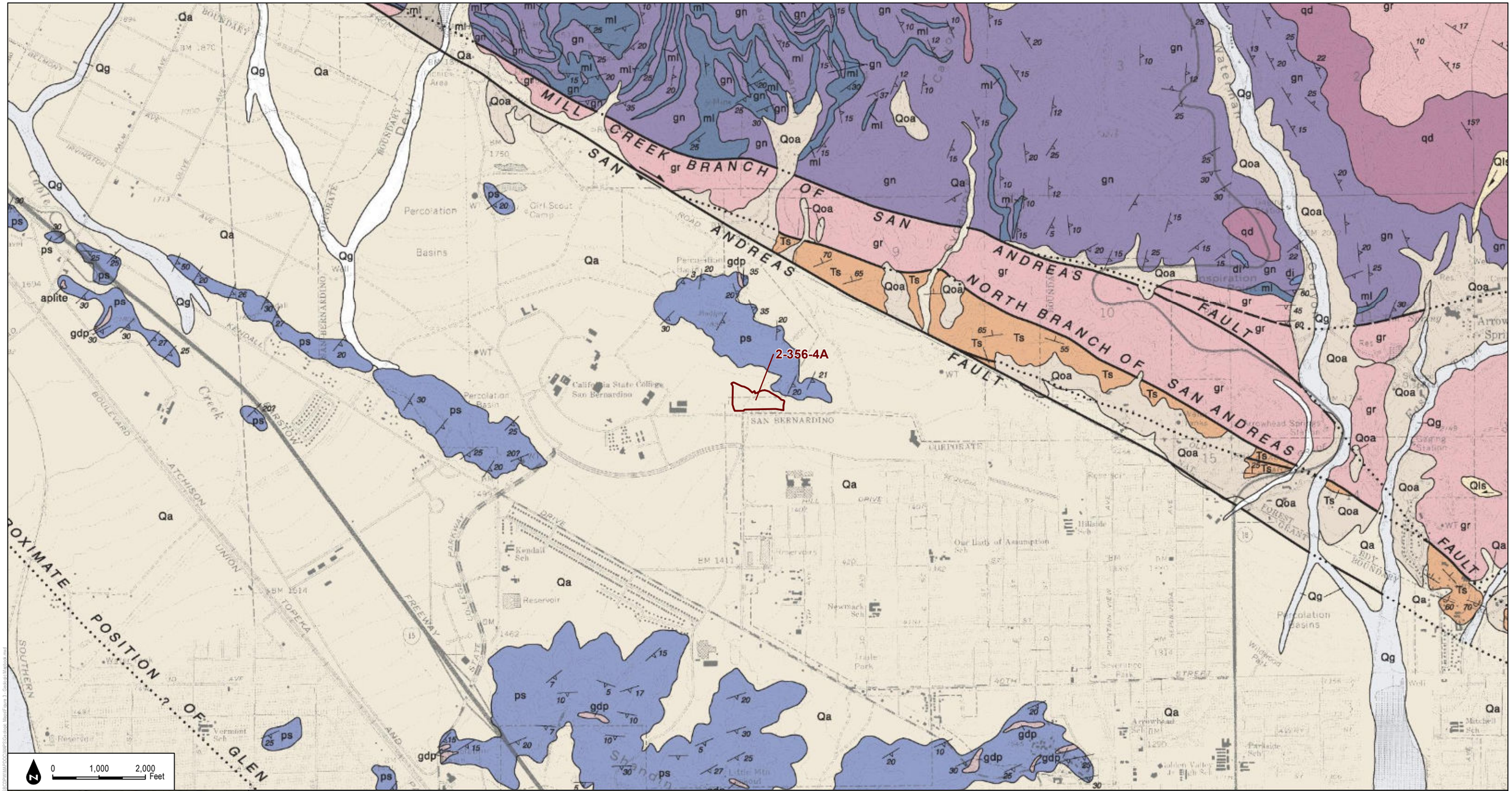
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

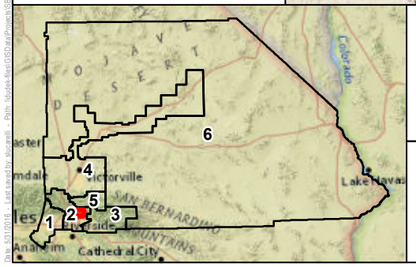
MAP 139

Zone 2 - Santa Ana River (Incl. COE)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

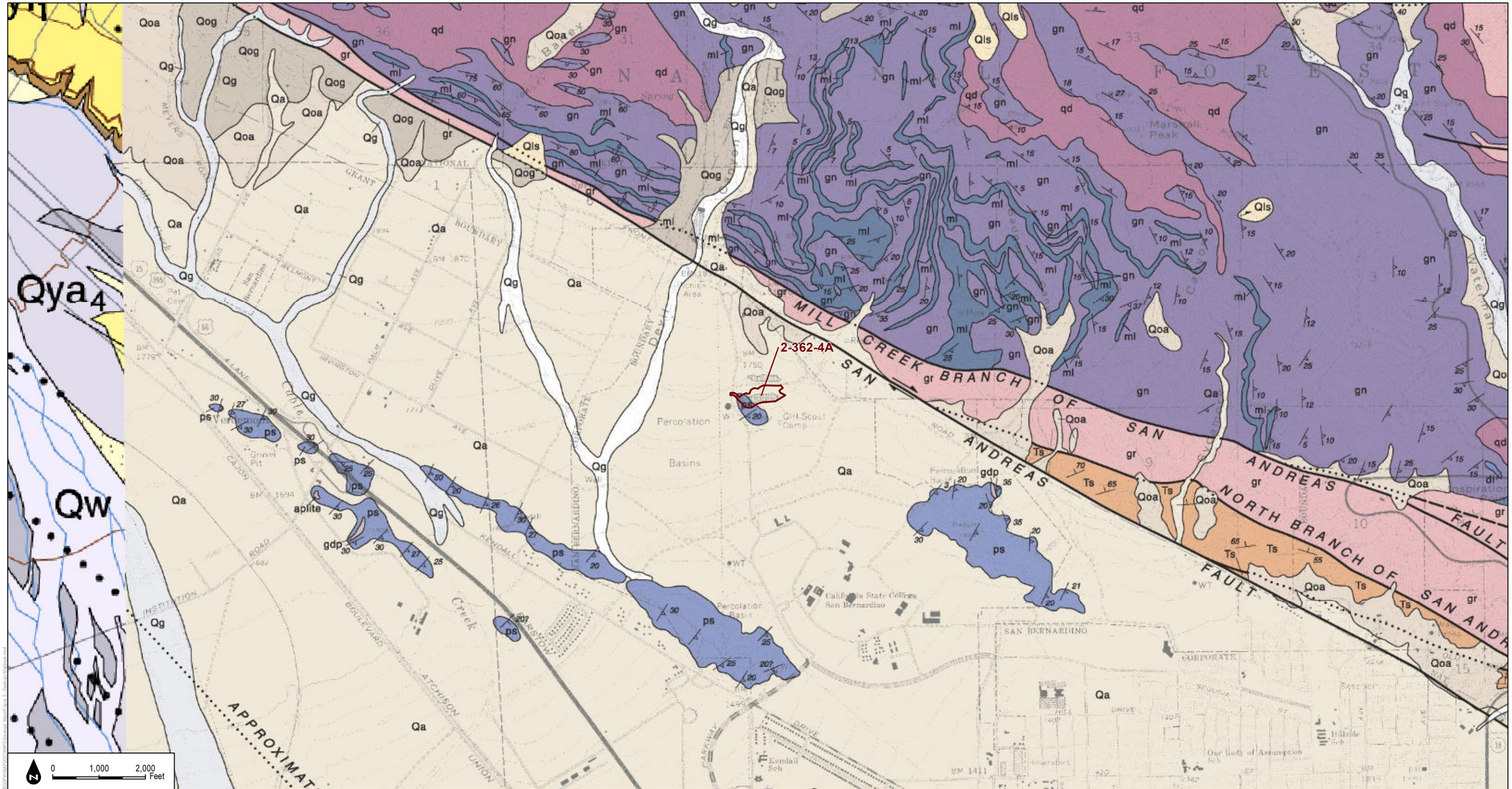
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

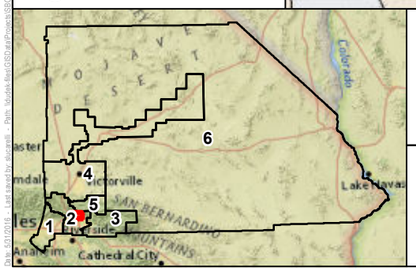
MAP 140

Zone 2 - South Badger Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

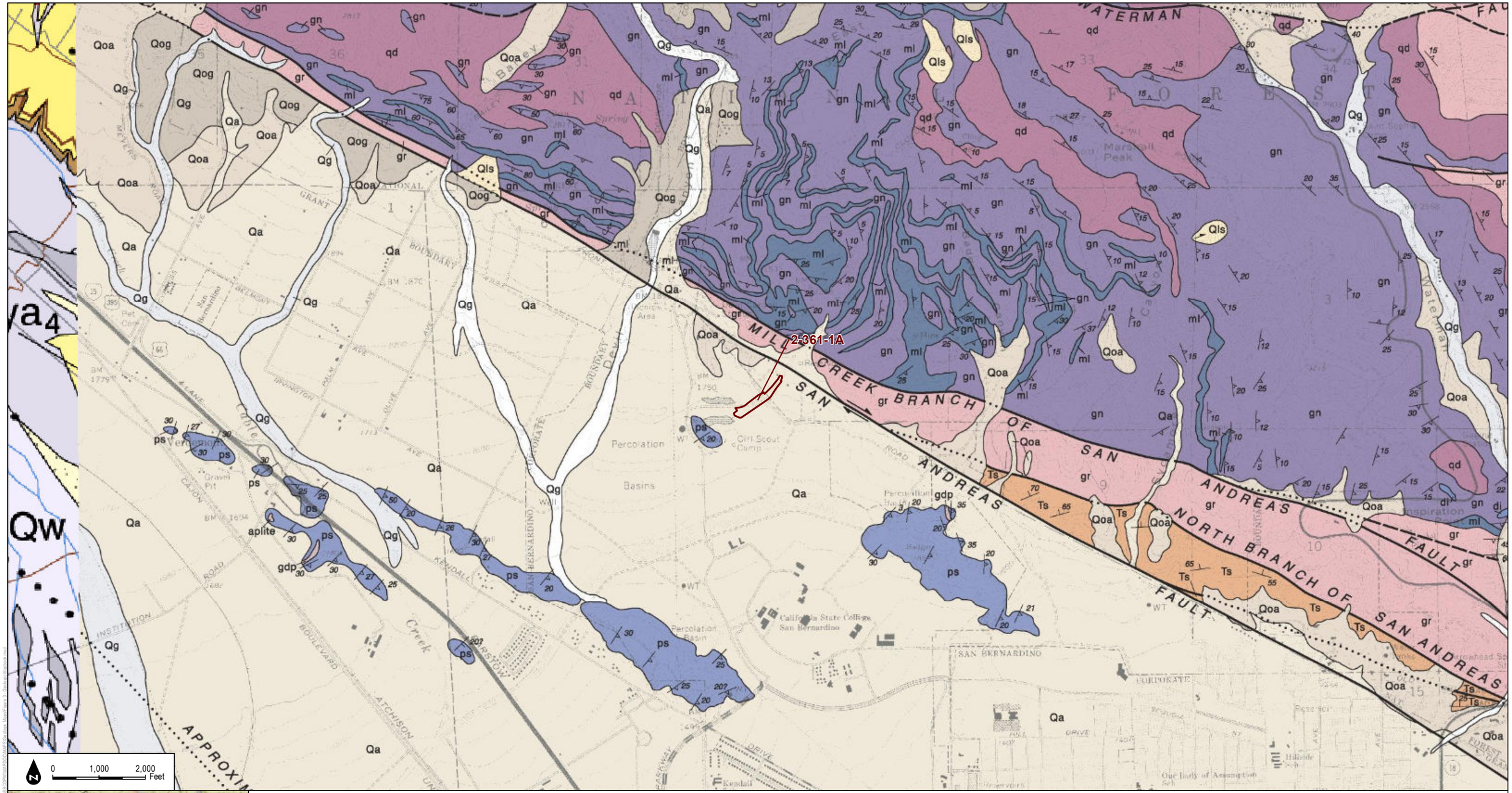
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

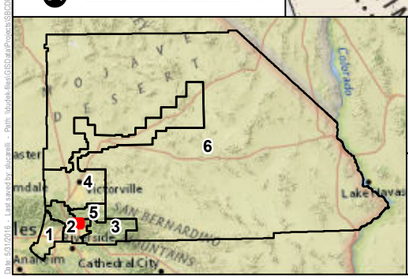
MAP 141

Zone 2 - Sweetwater Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

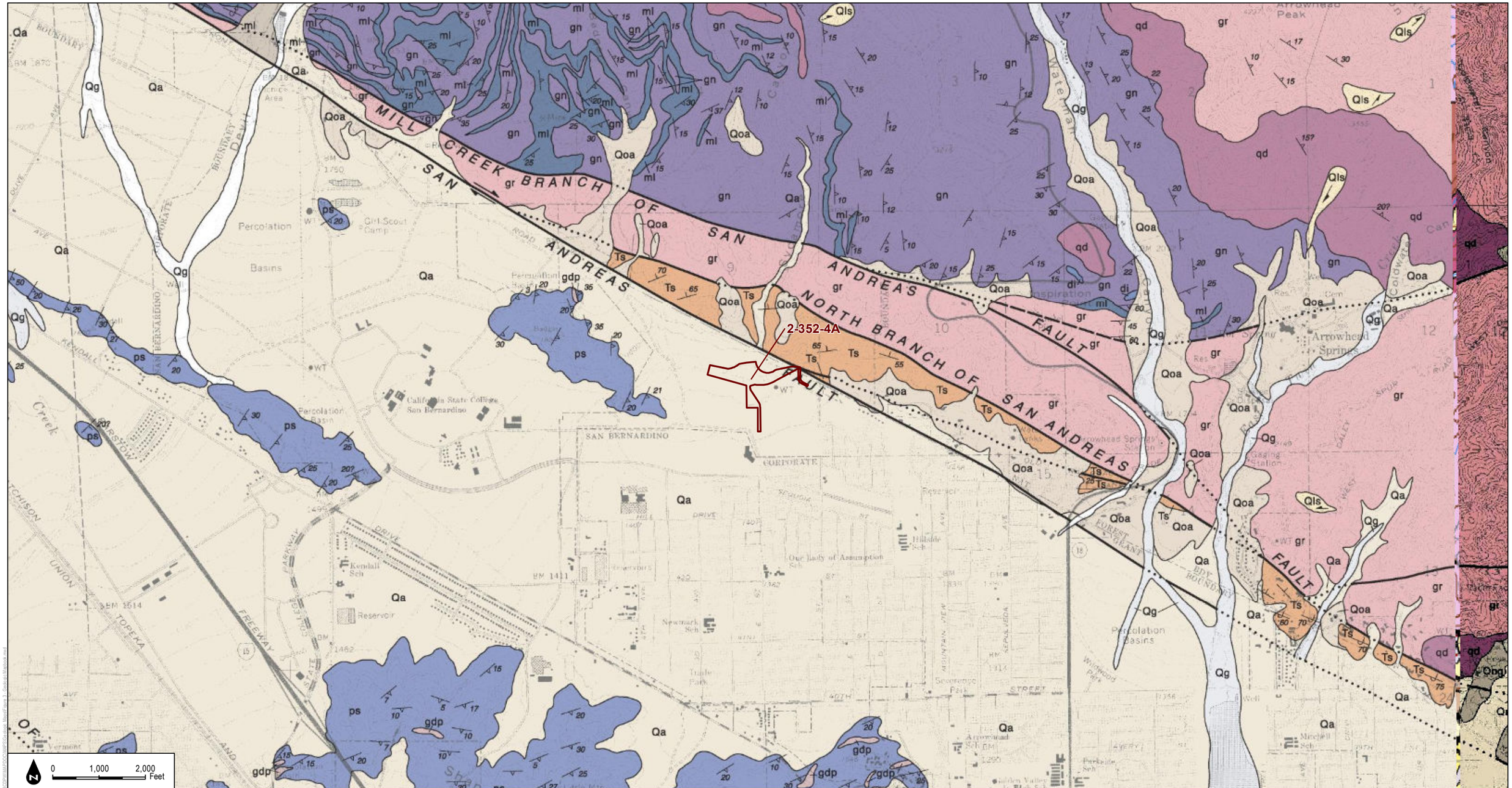
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

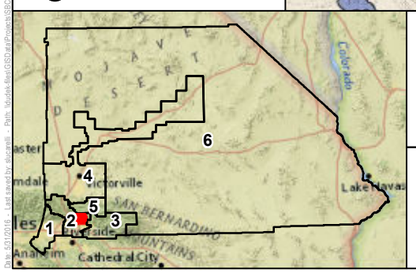
MAP 142

Zone 2 - Sweetwater Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

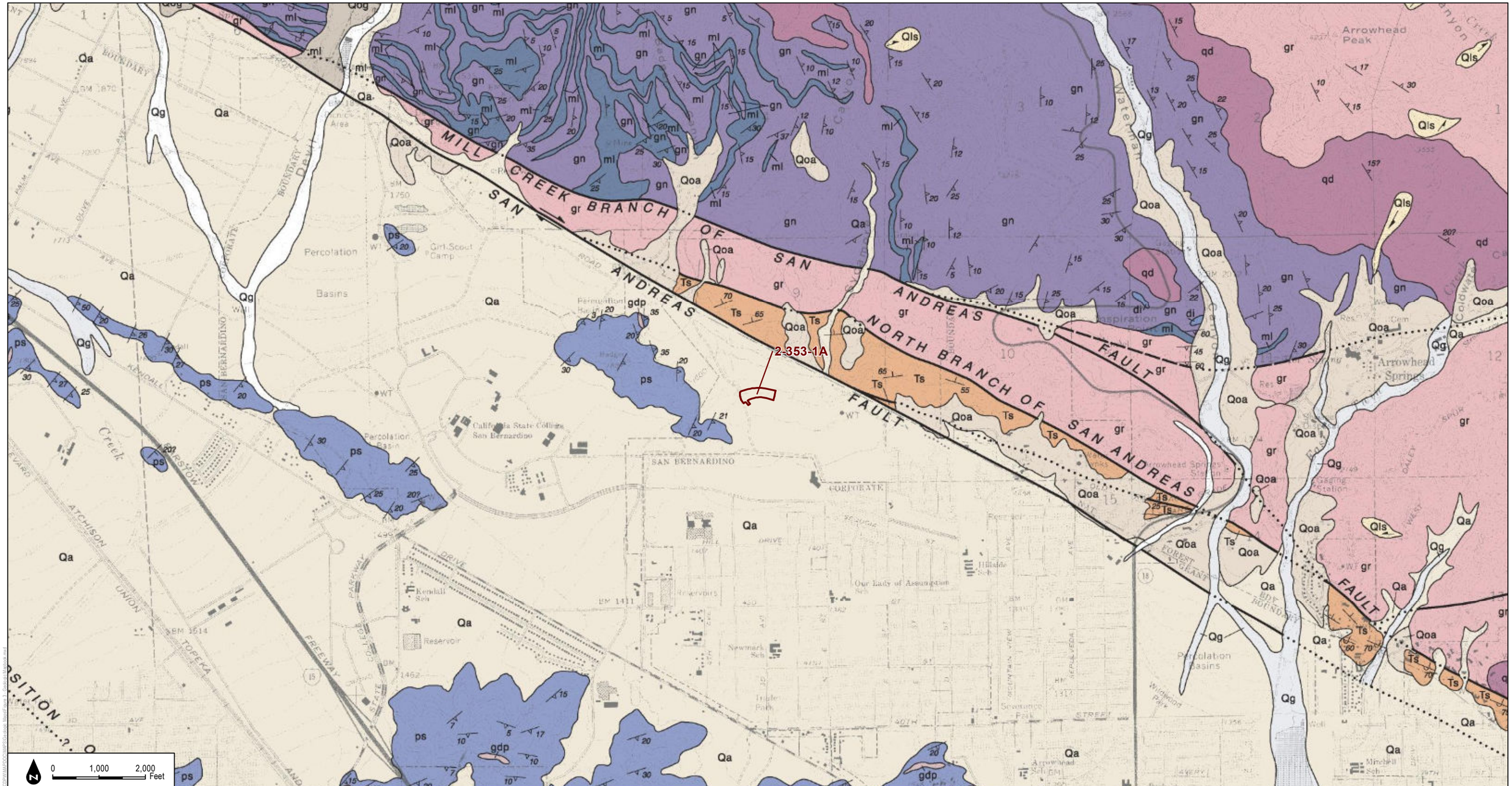
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

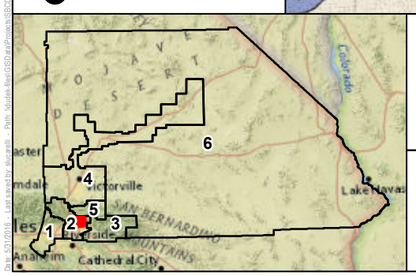
MAP 143

Zone 2 - Sycamore Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

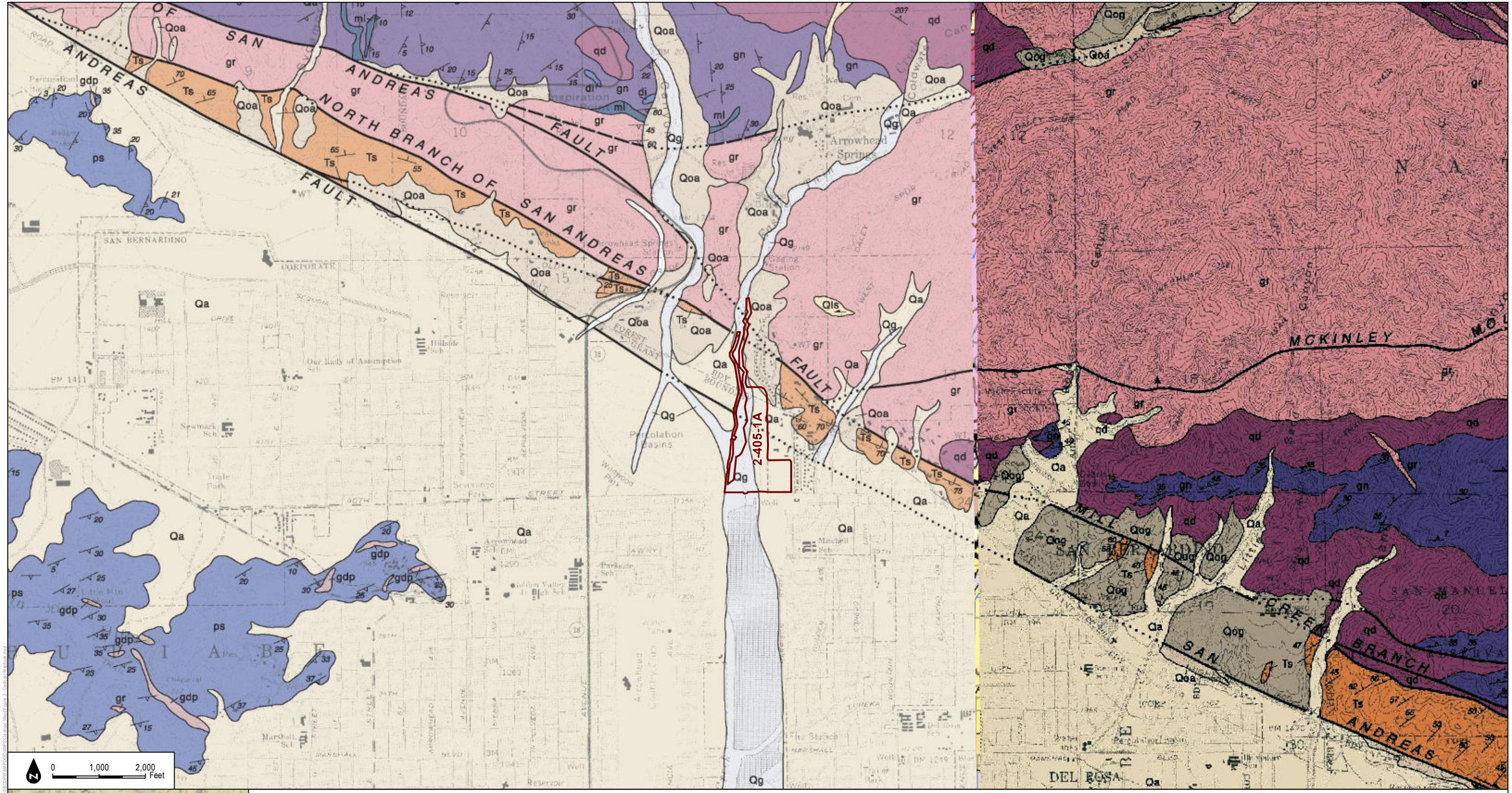
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

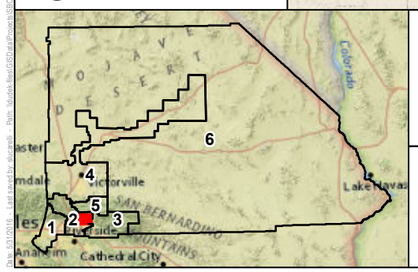
MAP 144

Zone 2 - Sycamore Diversion Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

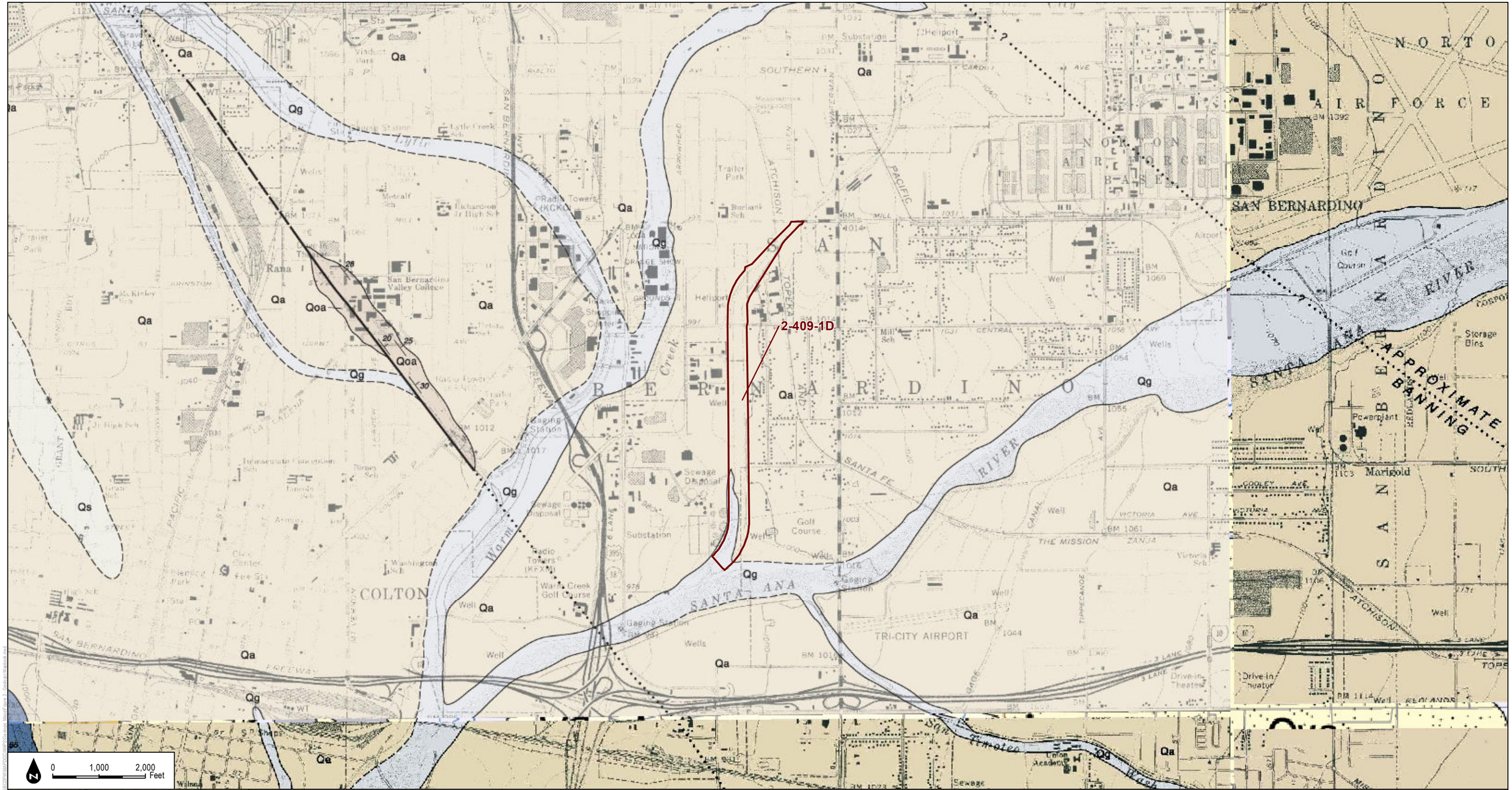
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

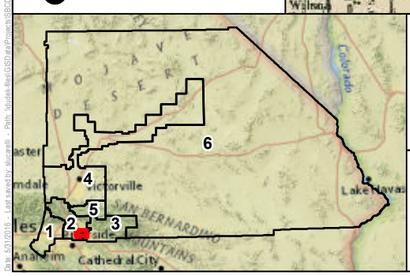
MAP 145

Zone 2 - Twin Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

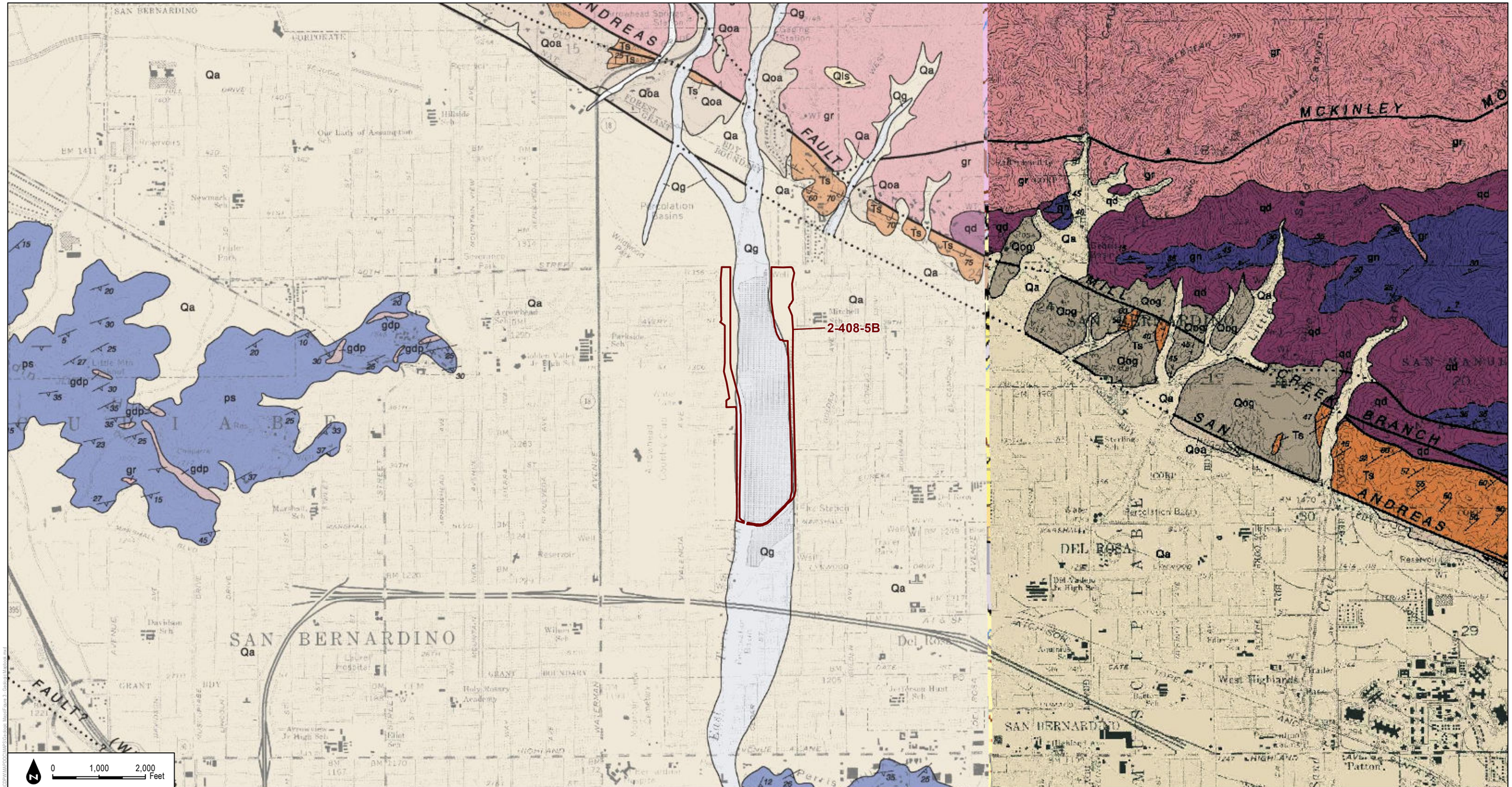
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

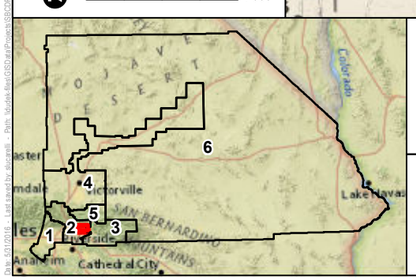
MAP 146

Zone 2 - Twin Creek Channel Improved, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

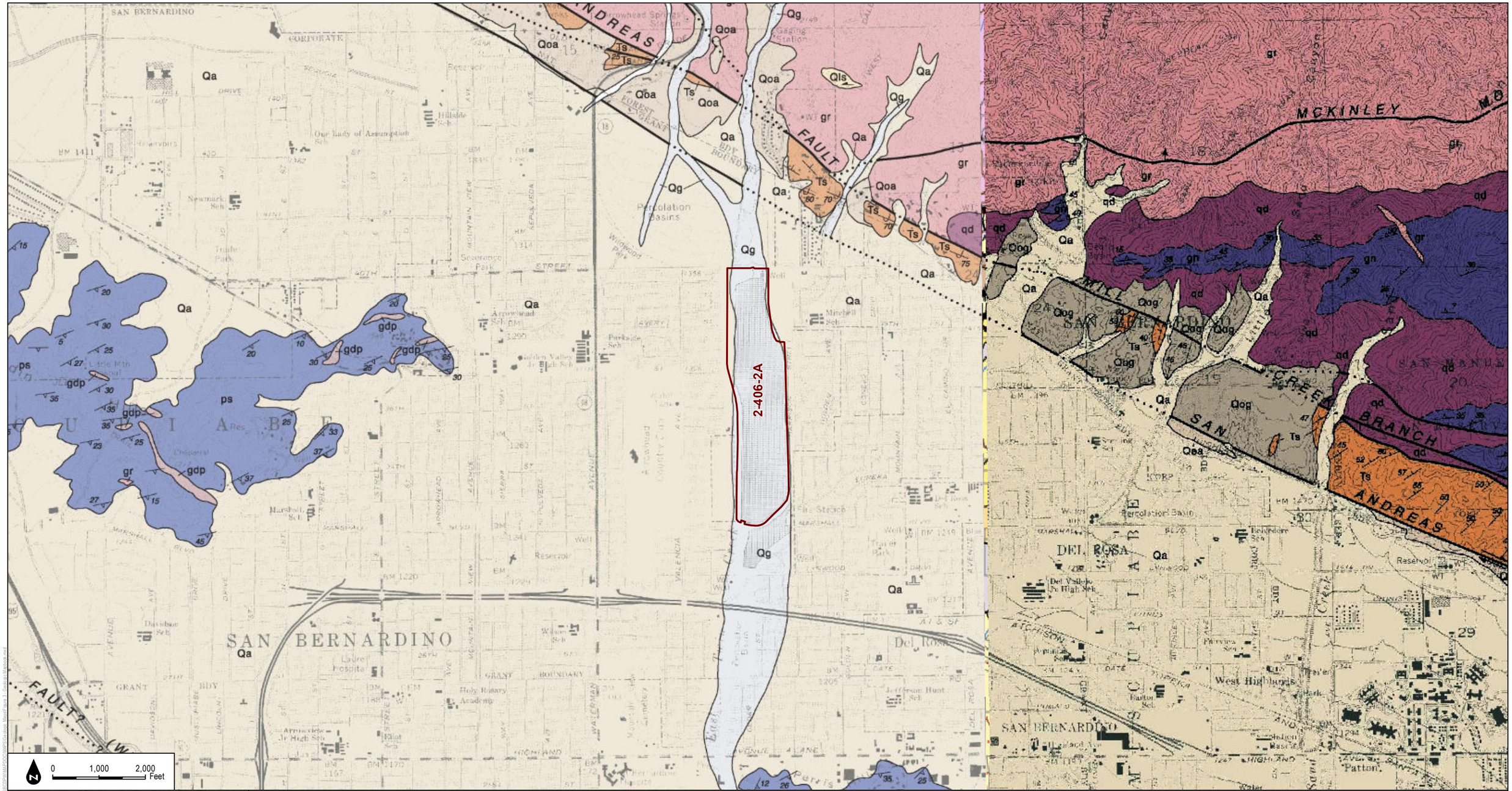
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

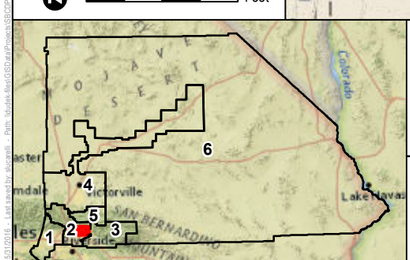
MAP 147

Zone 2 - Twin Creek Levees, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

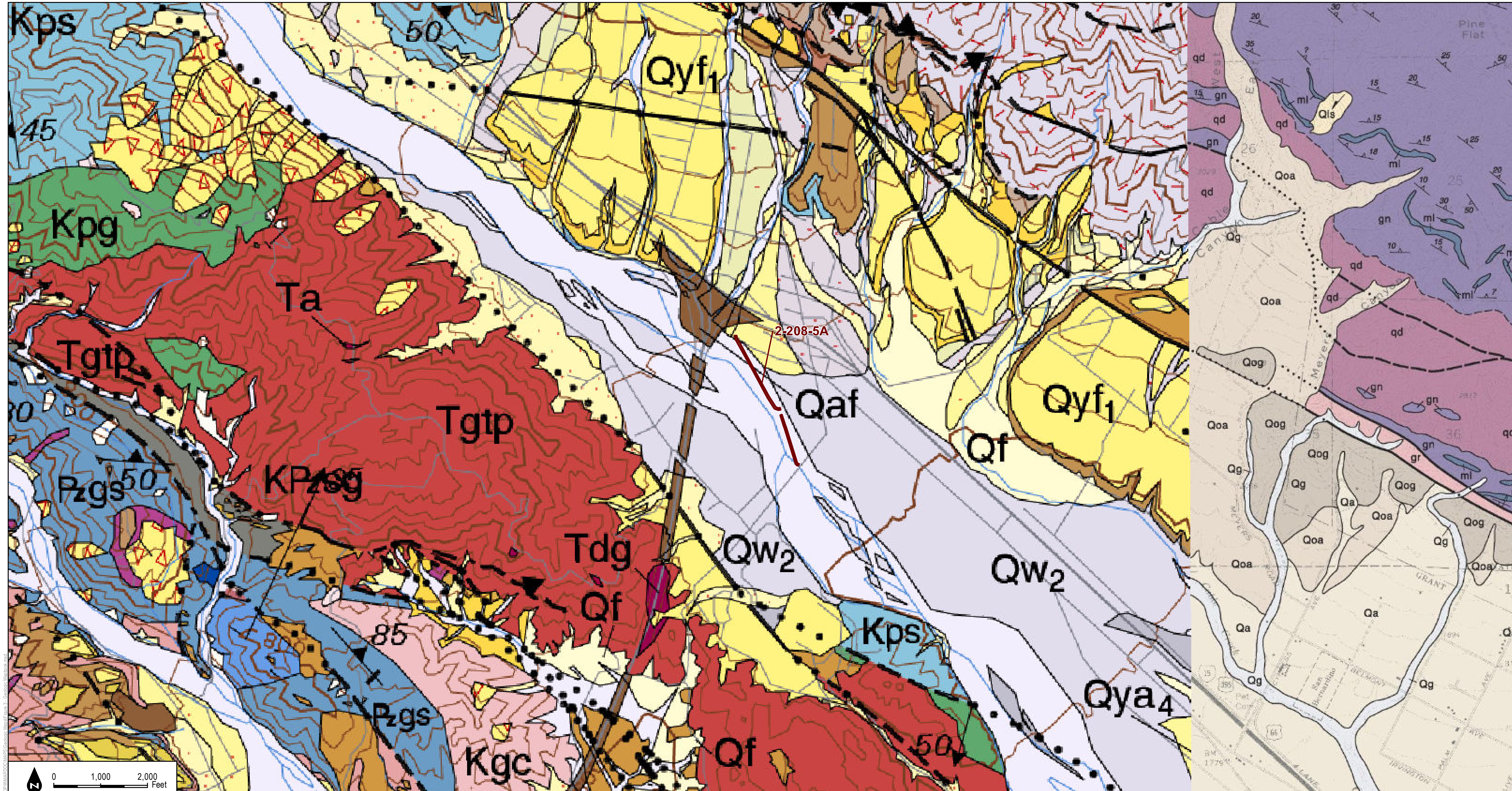
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

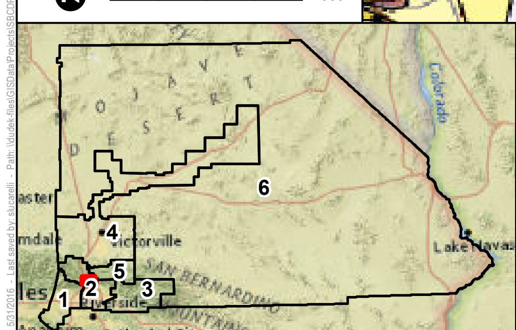
MAP 148

Zone 2 - Twin Creek Sprdg Grnds

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

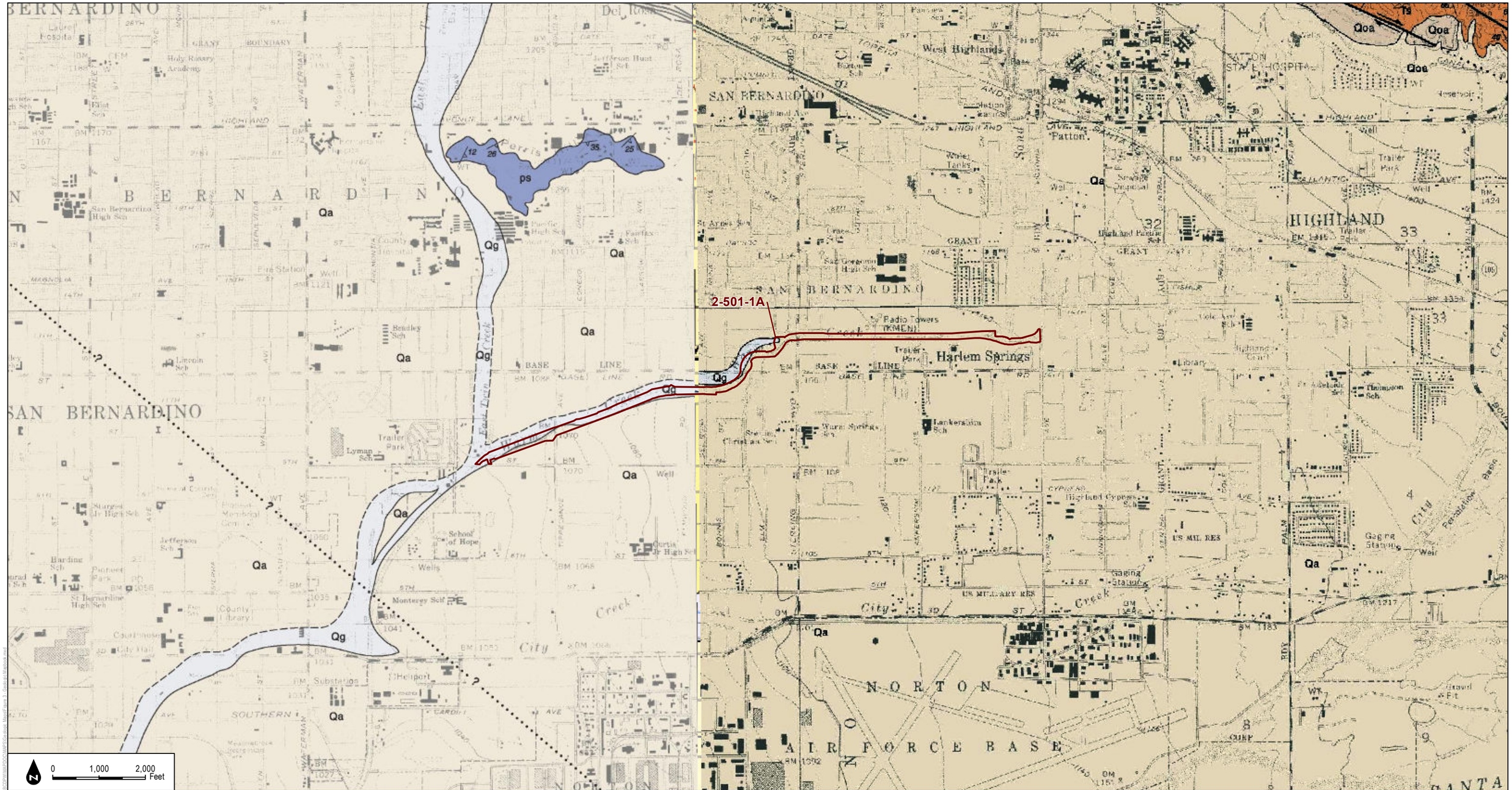
San Bernardino Department of Public Works

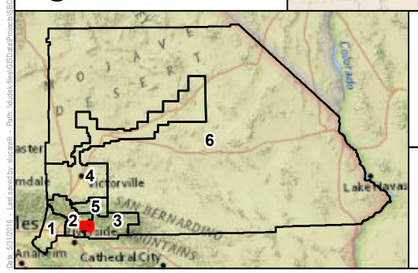
MAP 149

Zone 2 - Upper Devore Levee, COE

Geologic Map

Date: 5/31/2016 - Last saved by: slucarelli - Path: \\dudek-files\GISData\Projects\SBCDPW\MAPDOC\MAPS\Geologic Maps\Figure 3 - Geologic Mapbook.mxd





Redbook Polygons

1:24,000

DUDEK

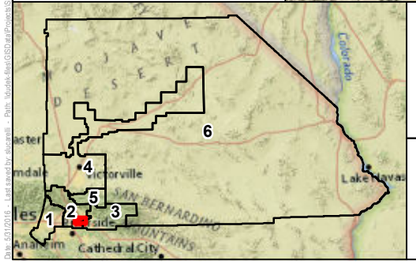
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 150

Zone 2 - Upper Warm Creek Channel

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

1:24,000

DUDEK

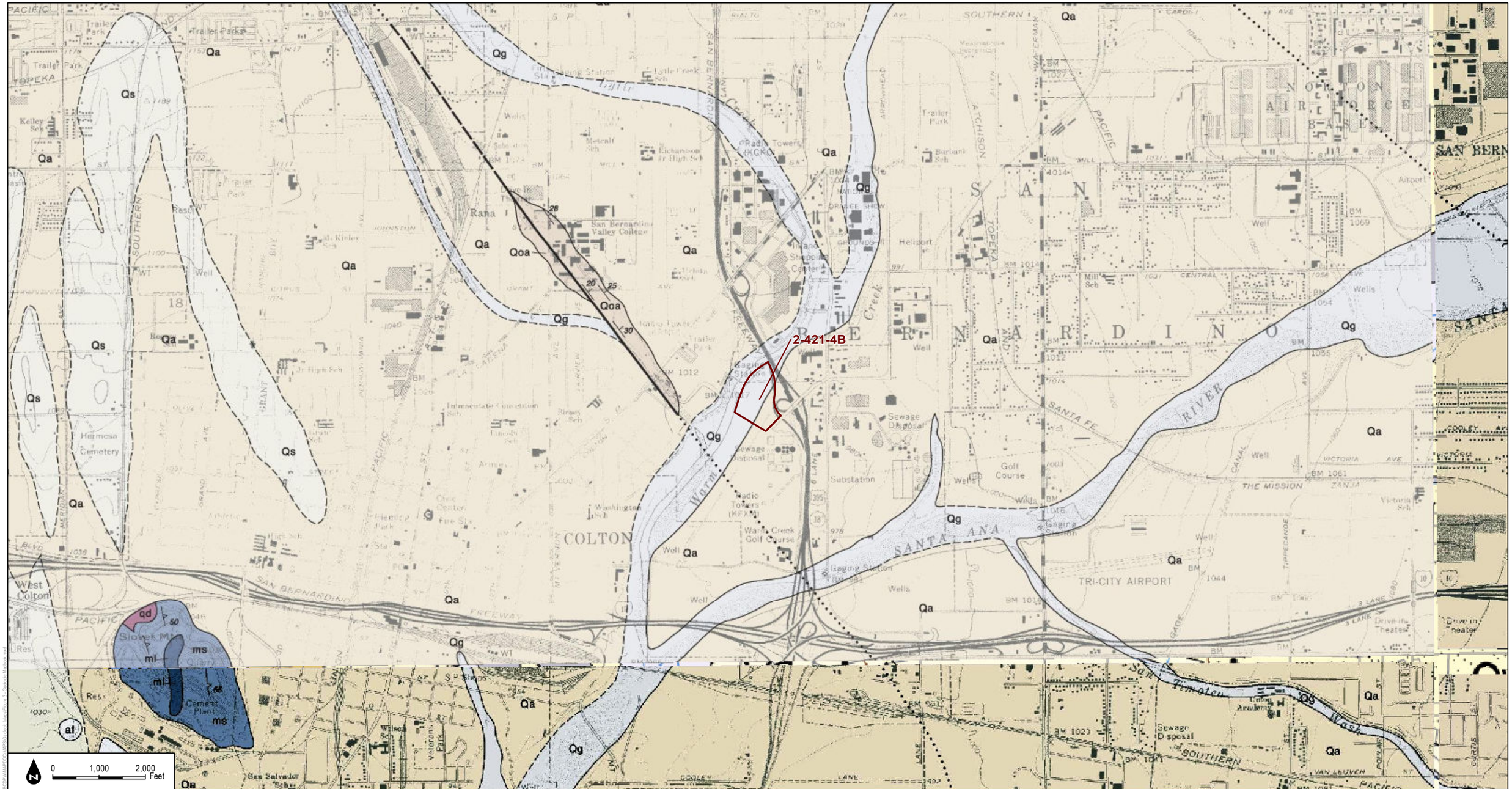
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

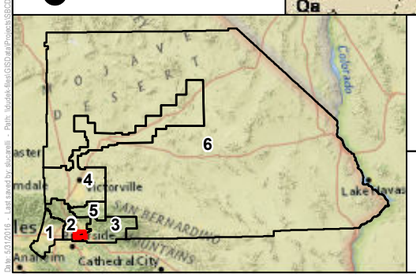
MAP 151

Zone 2 - Warm Creek Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

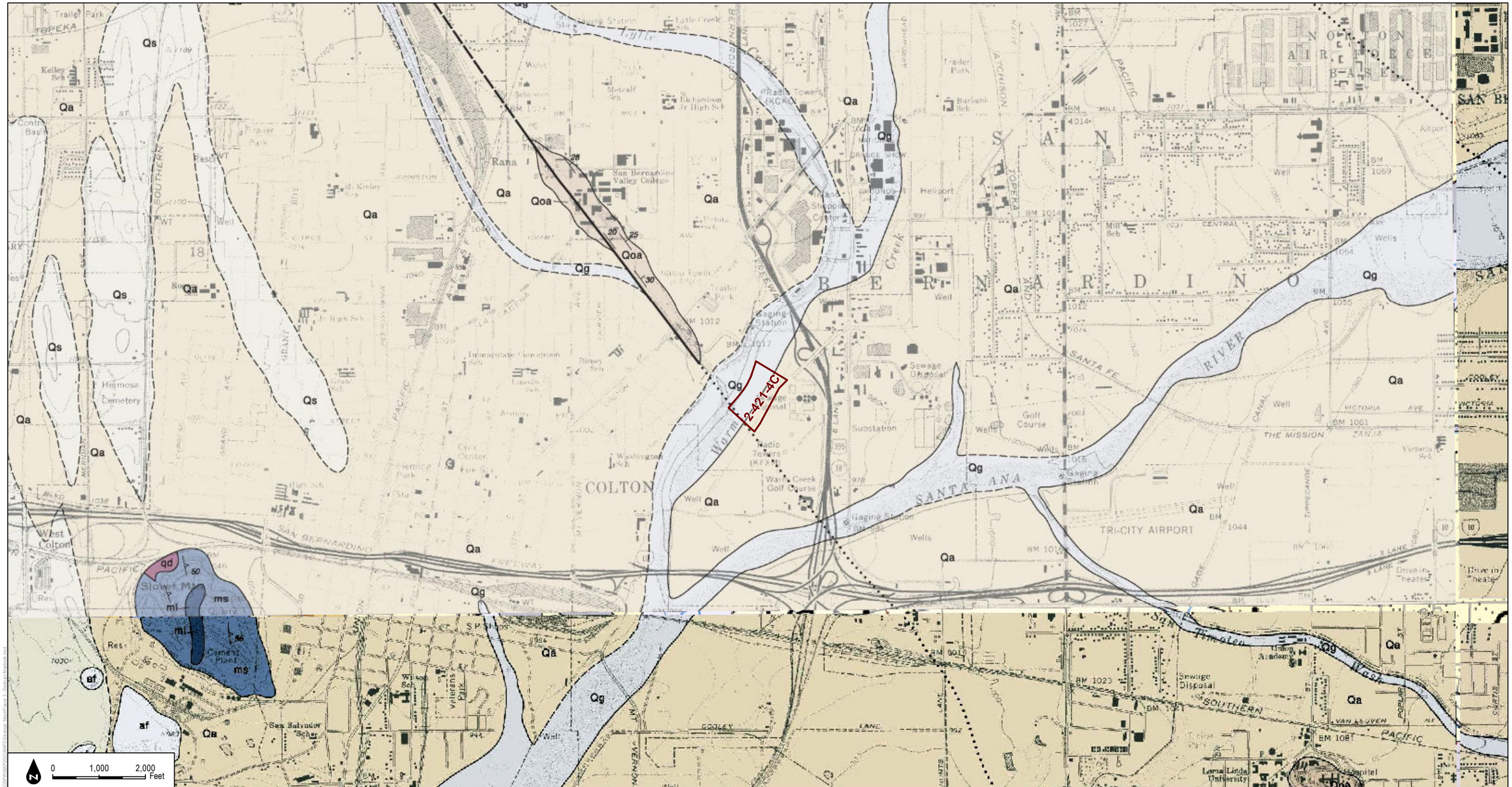
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

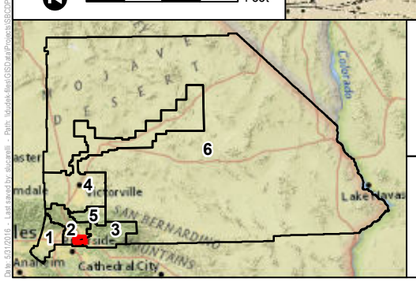
MAP 152

Zone 2 - Warm Creek Conservation Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

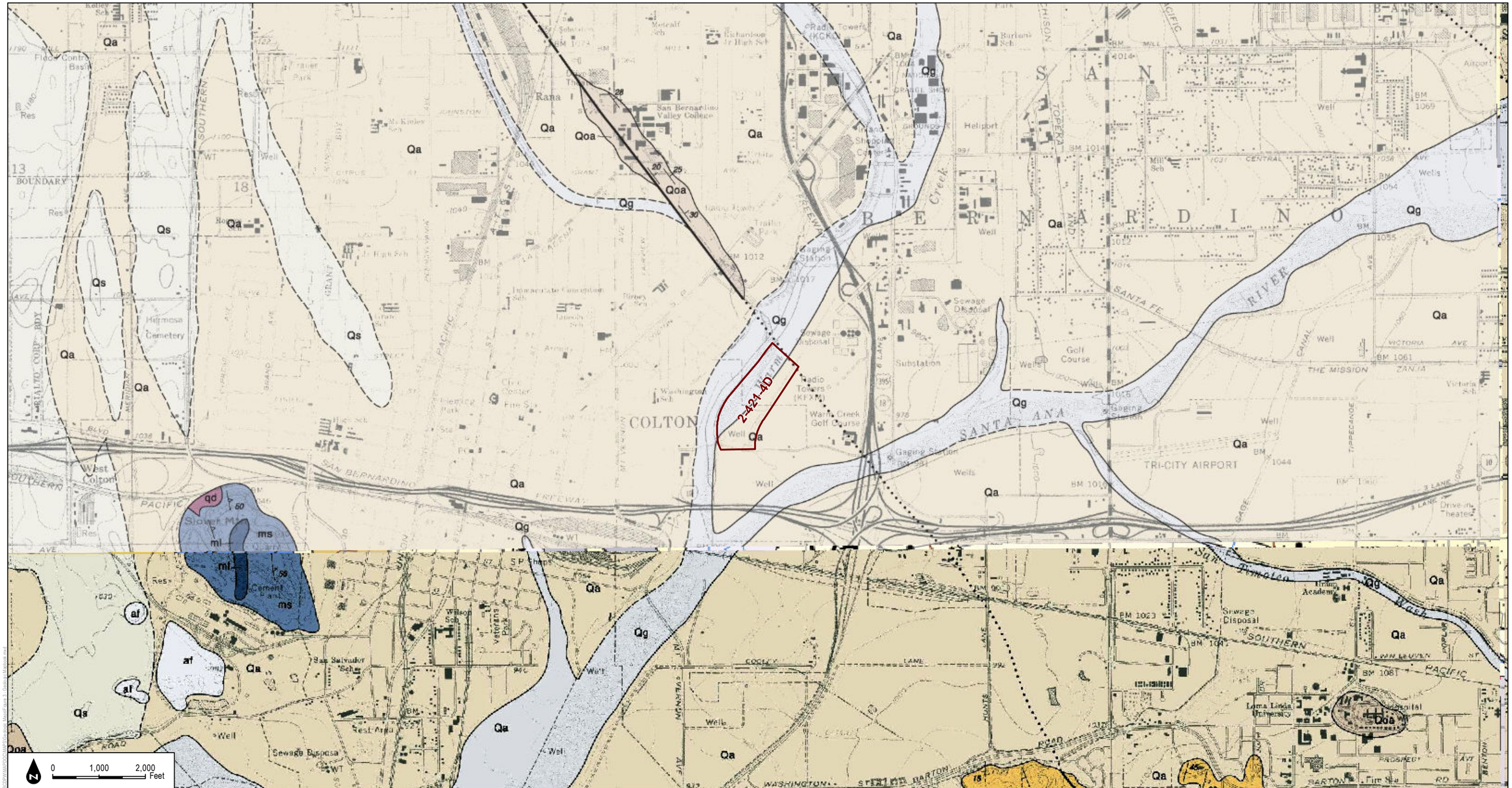
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 153

Zone 2 - Warm Creek Conservation Basin #3

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

1:24,000

DUDEK

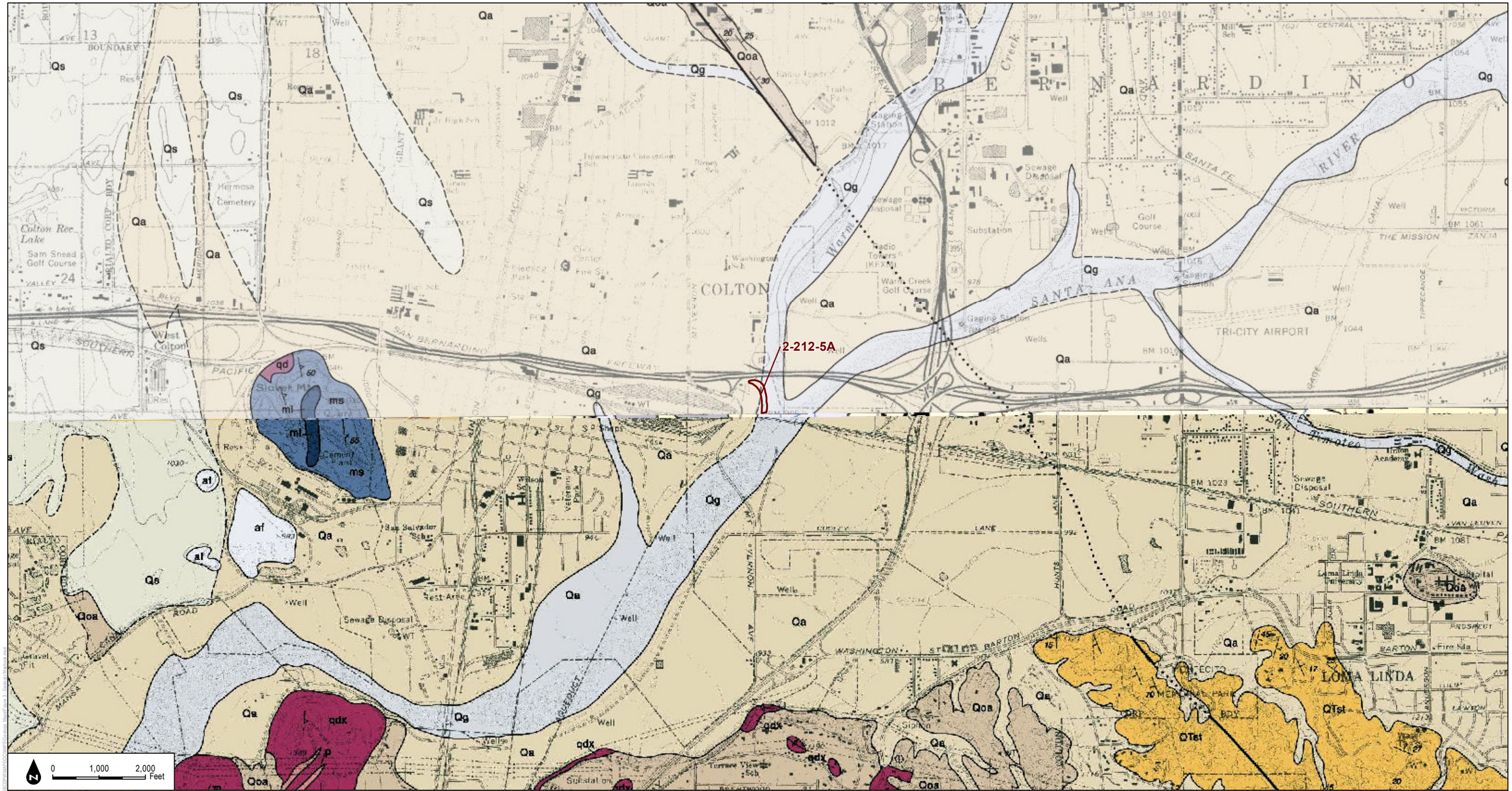
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

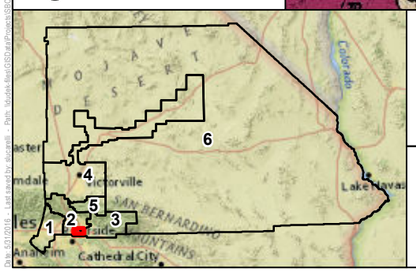
MAP 154

Zone 2 - Warm Creek Conservation Basin #4

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

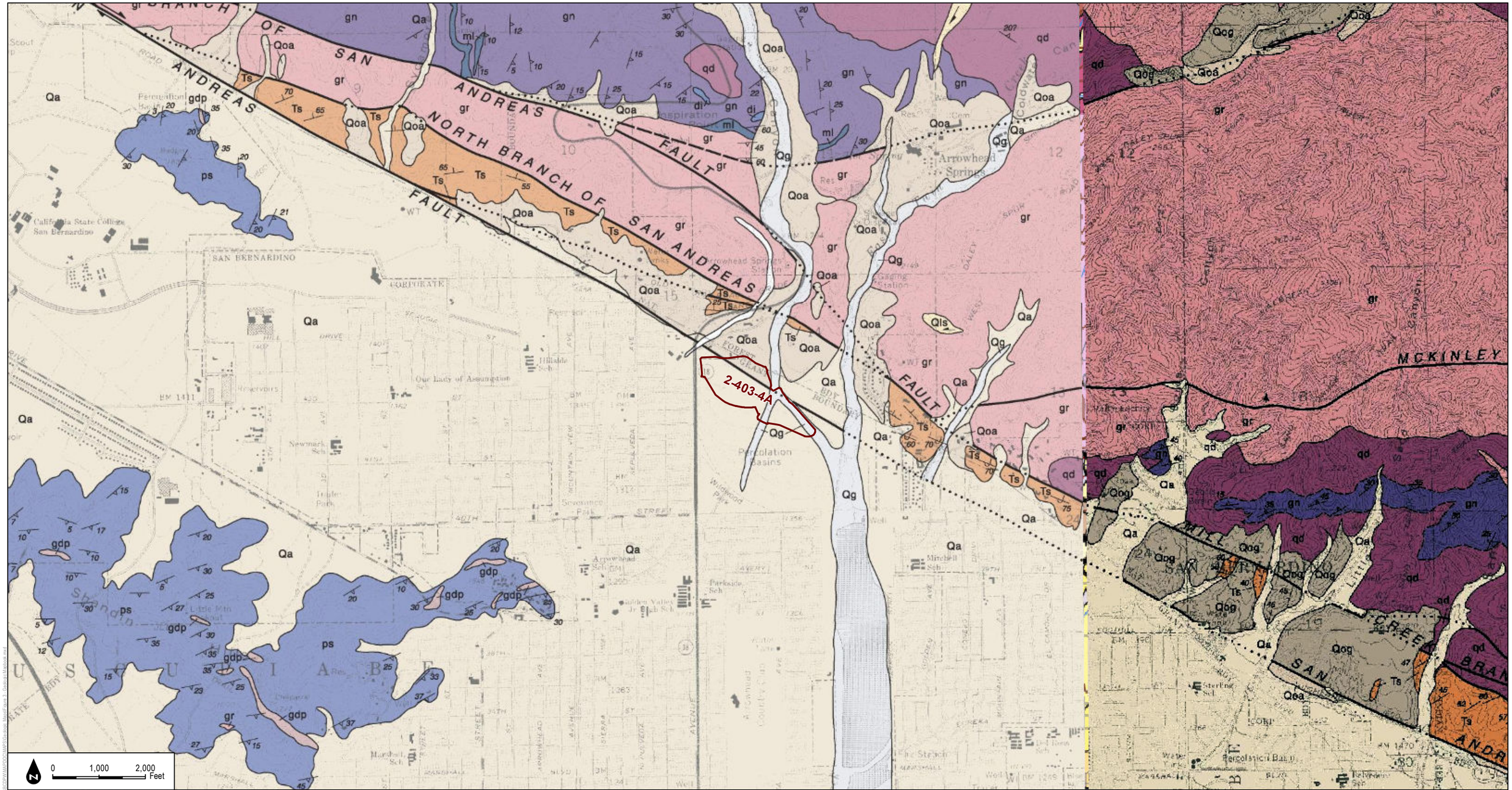
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

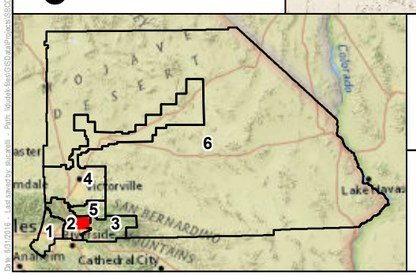
MAP 155

Zone 2 - Warm Creek Levee, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

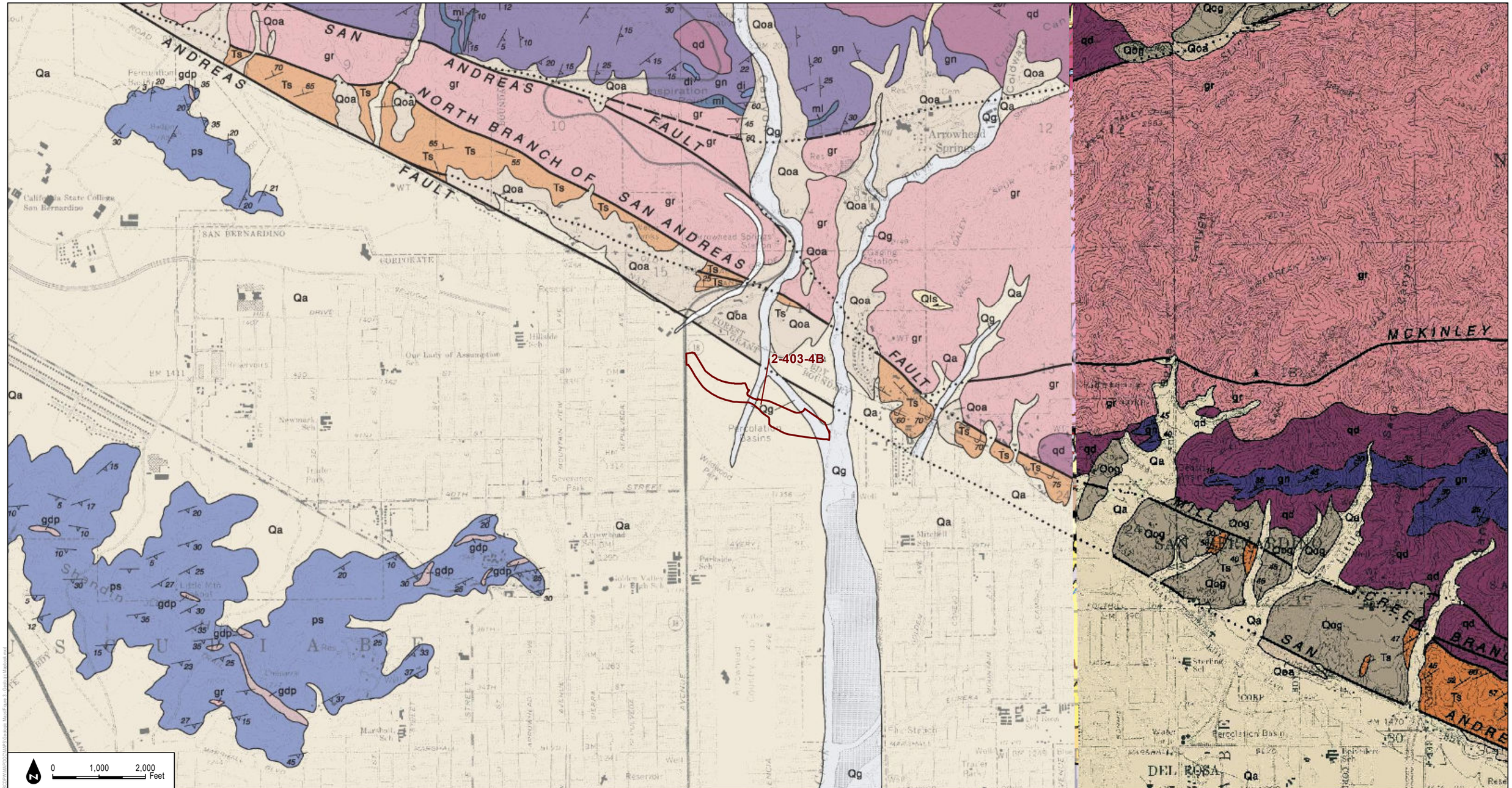
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

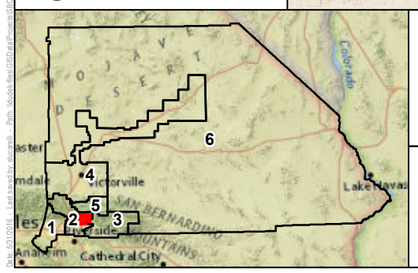
MAP 156

Zone 2 - Waterman Basin #1

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

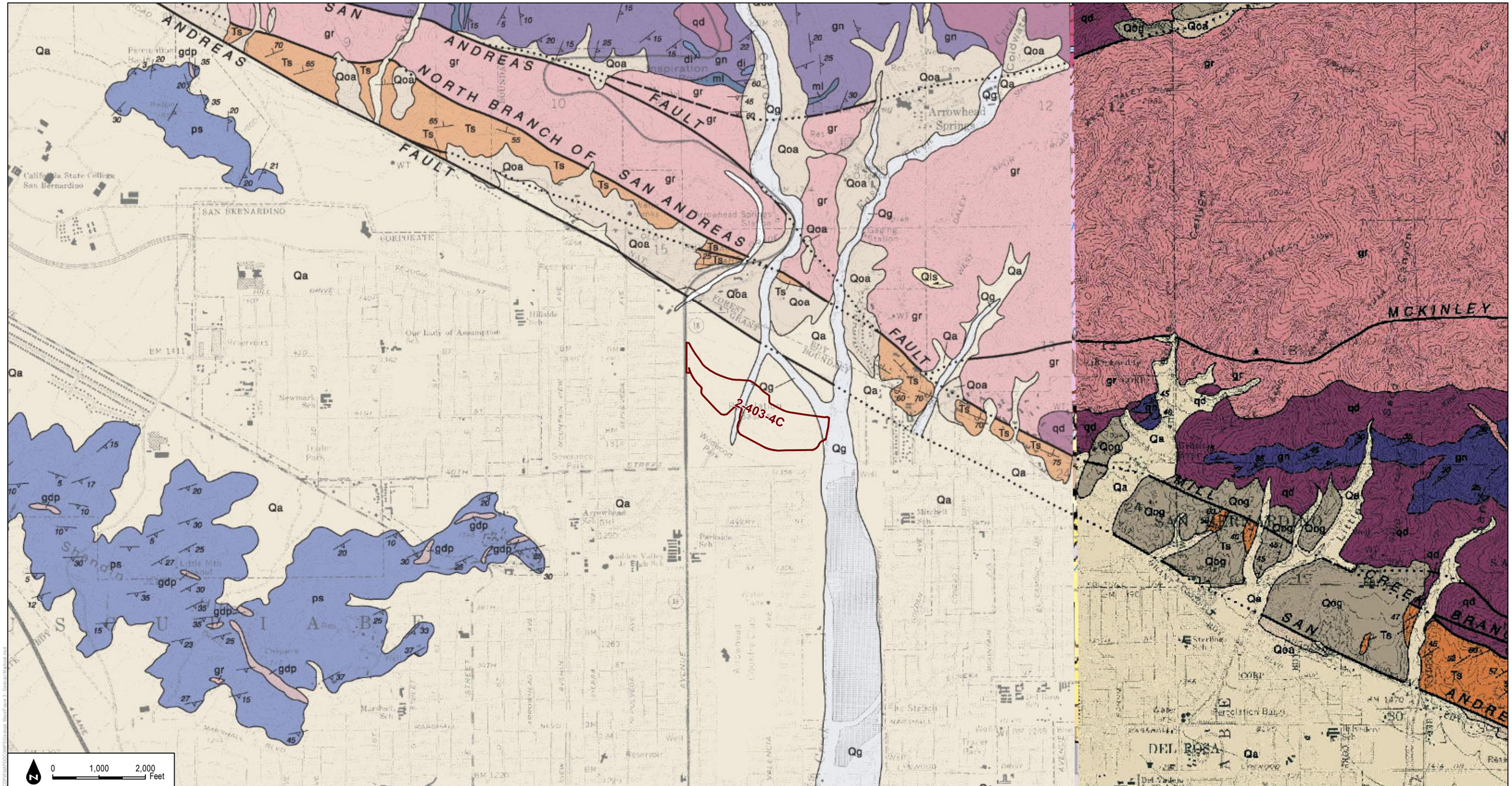
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

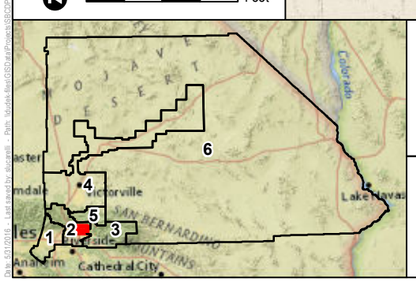
MAP 157

Zone 2 - Waterman Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

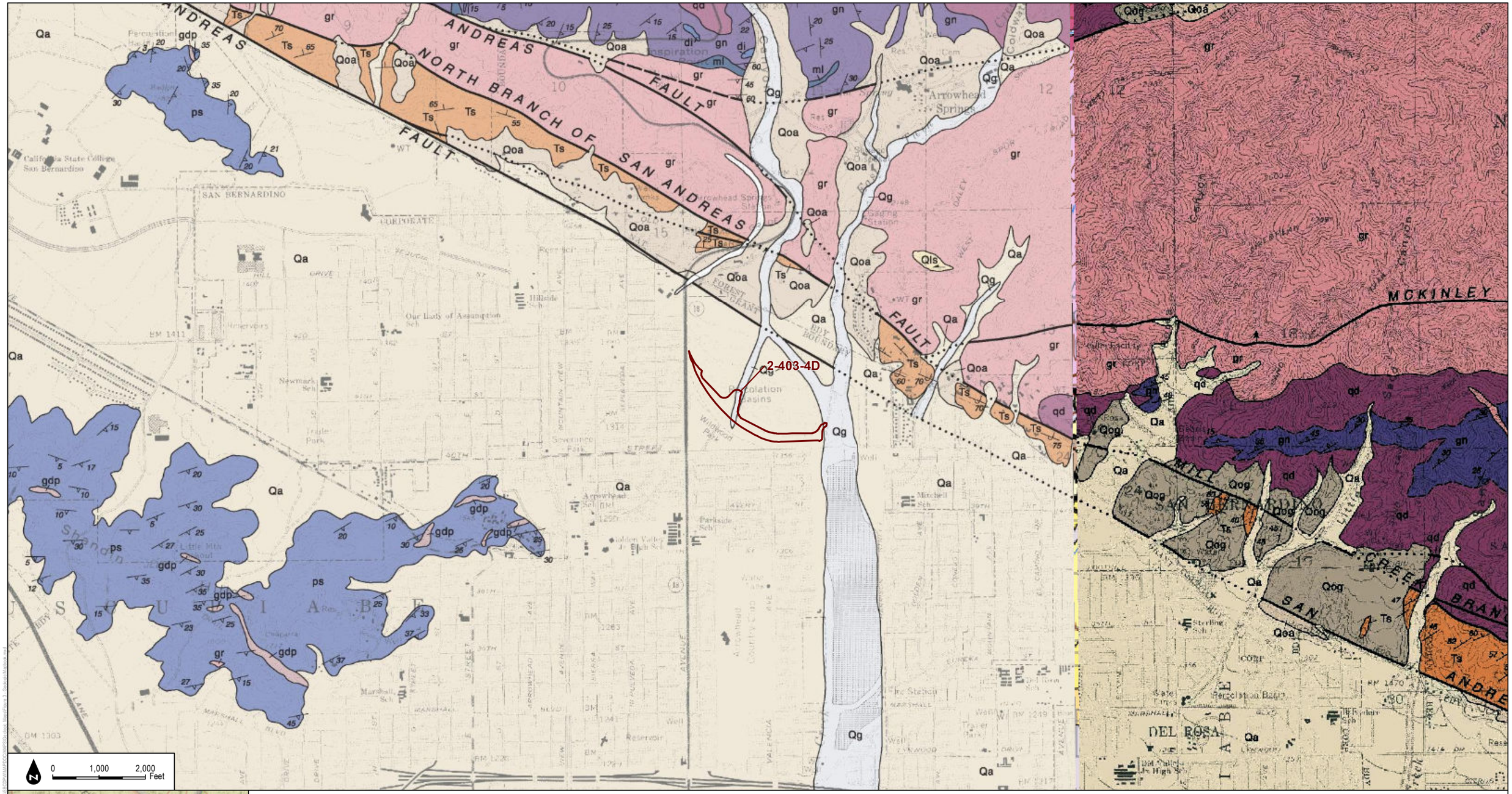
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

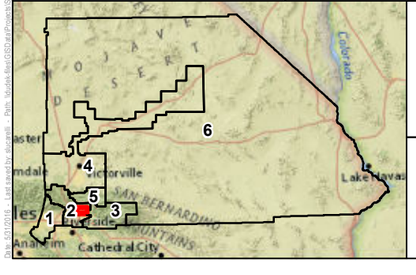
MAP 158

Zone 2 - Waterman Basin #3

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

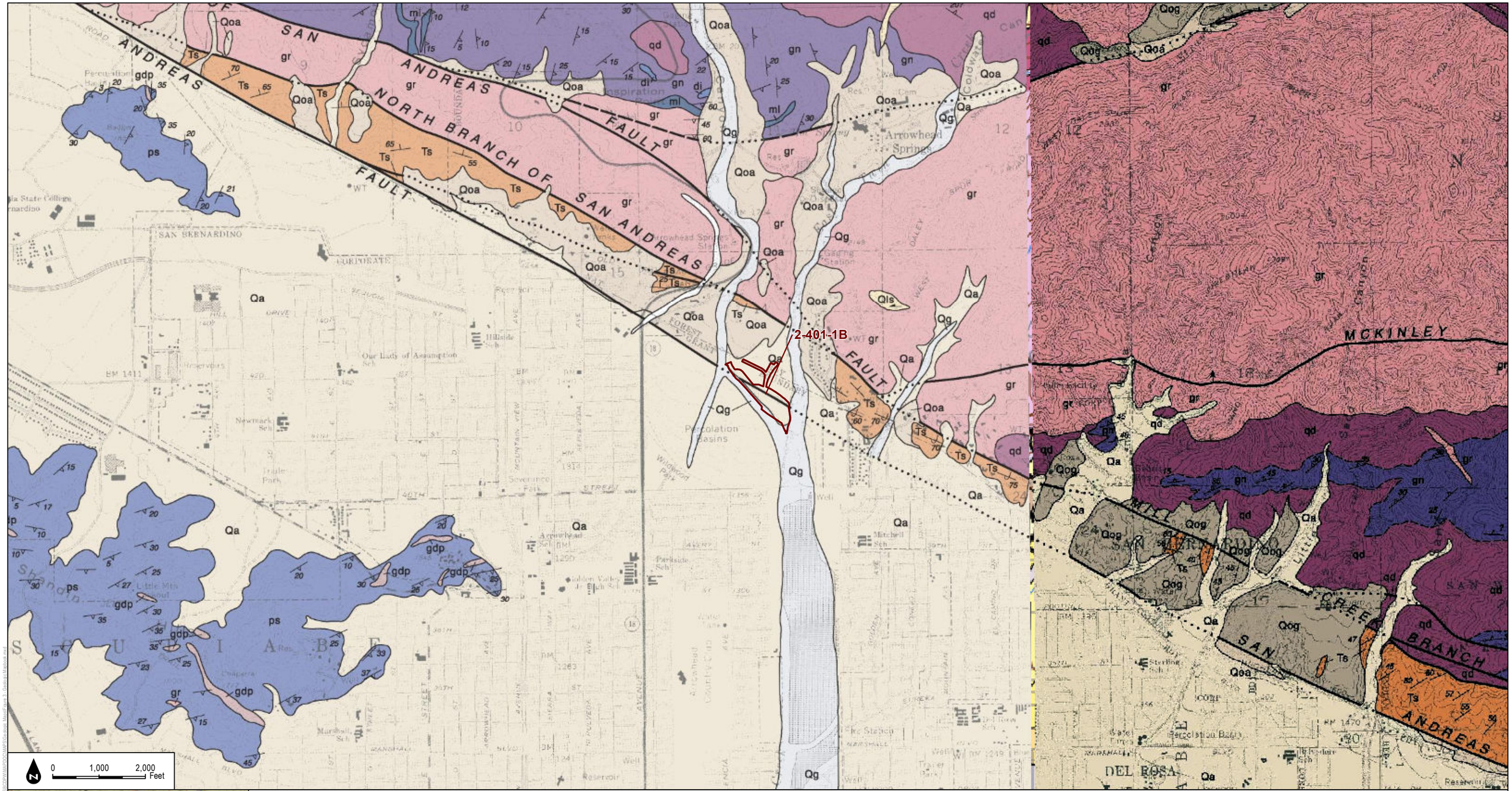
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

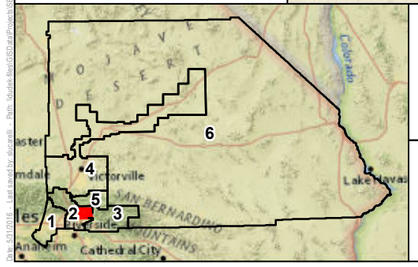
MAP 159

Zone 2 - Waterman Basin #4

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

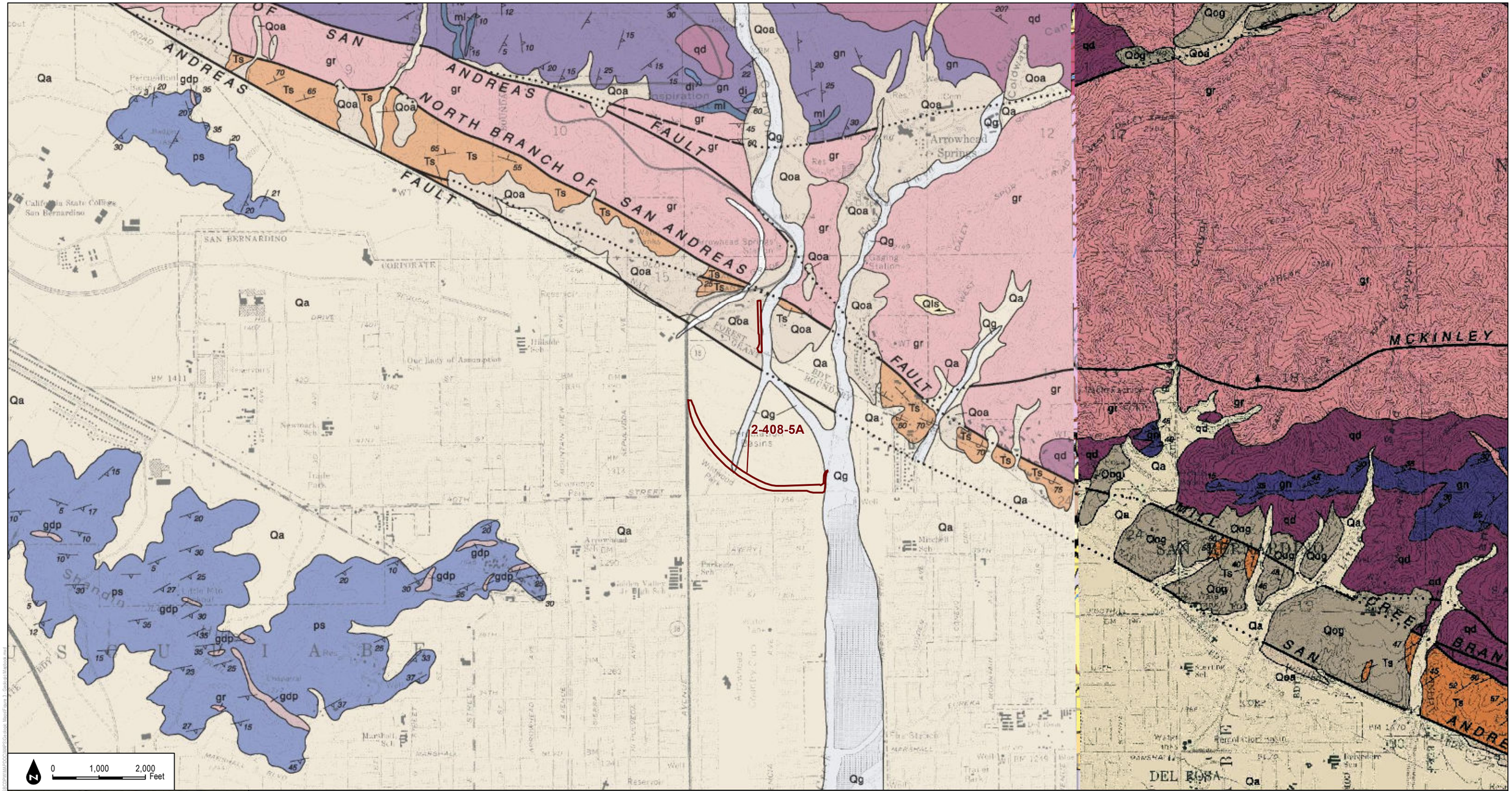
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

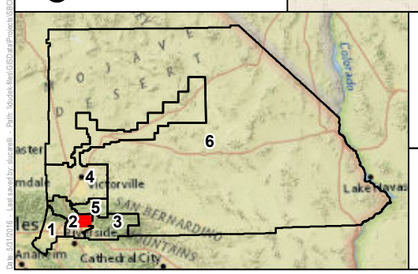
MAP 160

Zone 2 - Waterman Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

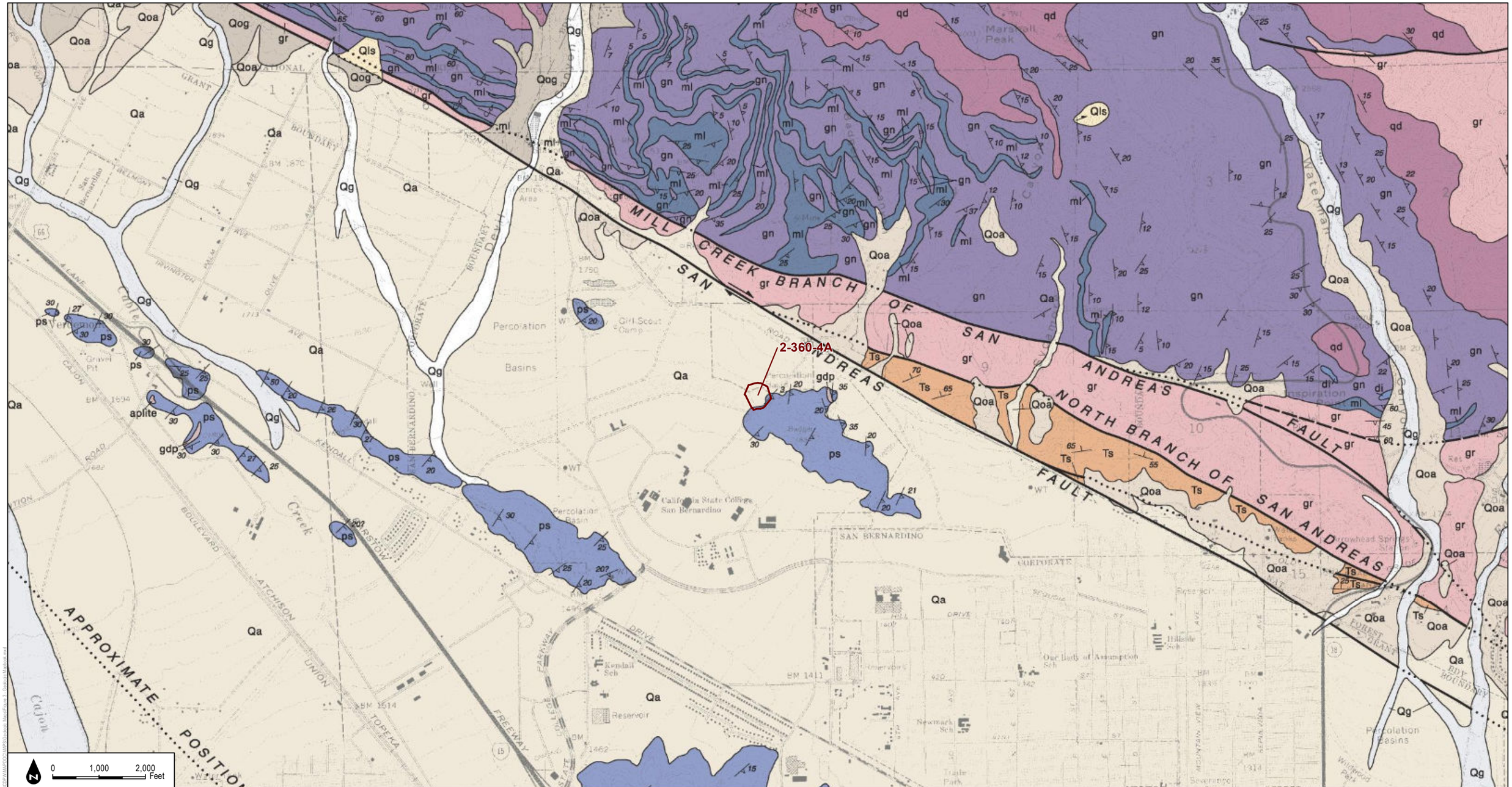
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

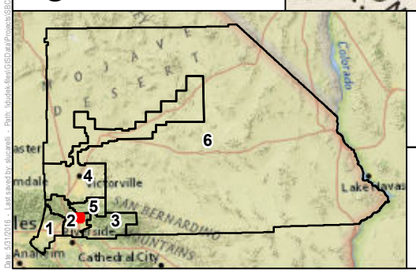
MAP 161

Zone 2 - Waterman Levee, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

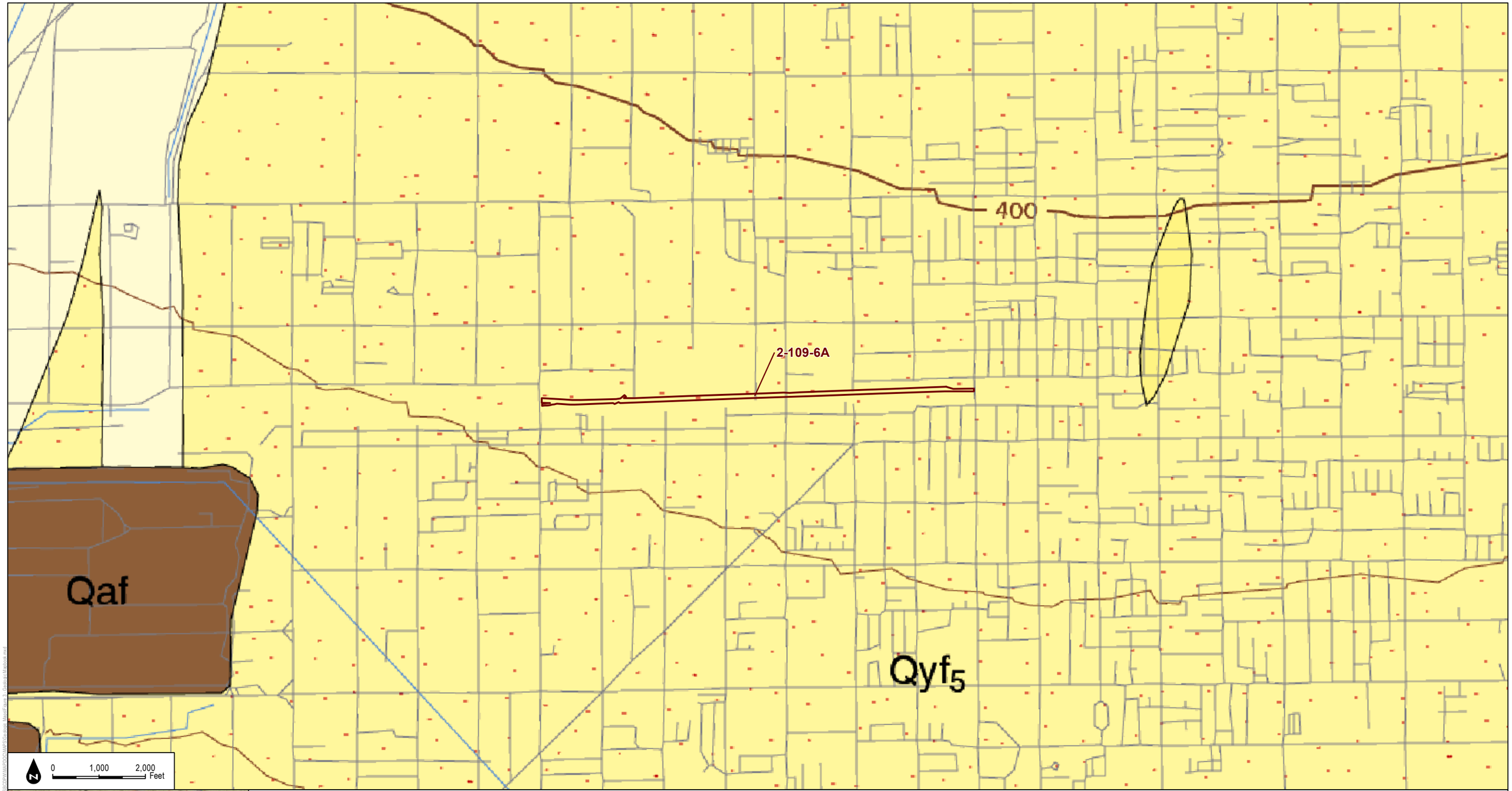
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

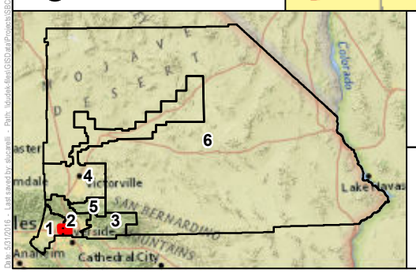
MAP 162

Zone 2 - West Badger Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

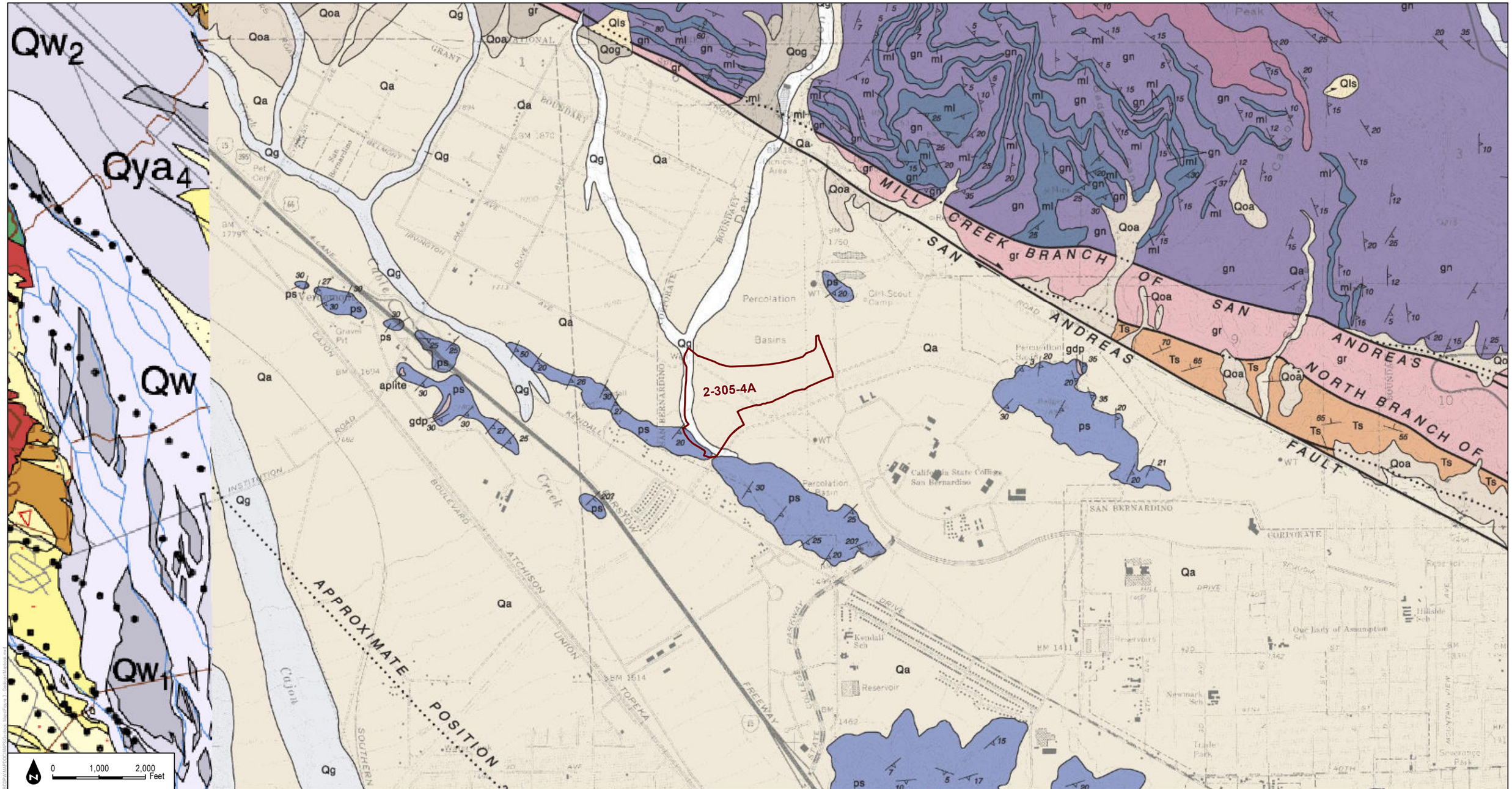
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

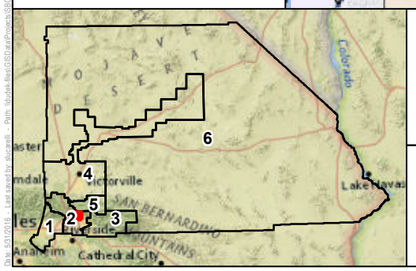
MAP 163

Zone 2 - West Fontana Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

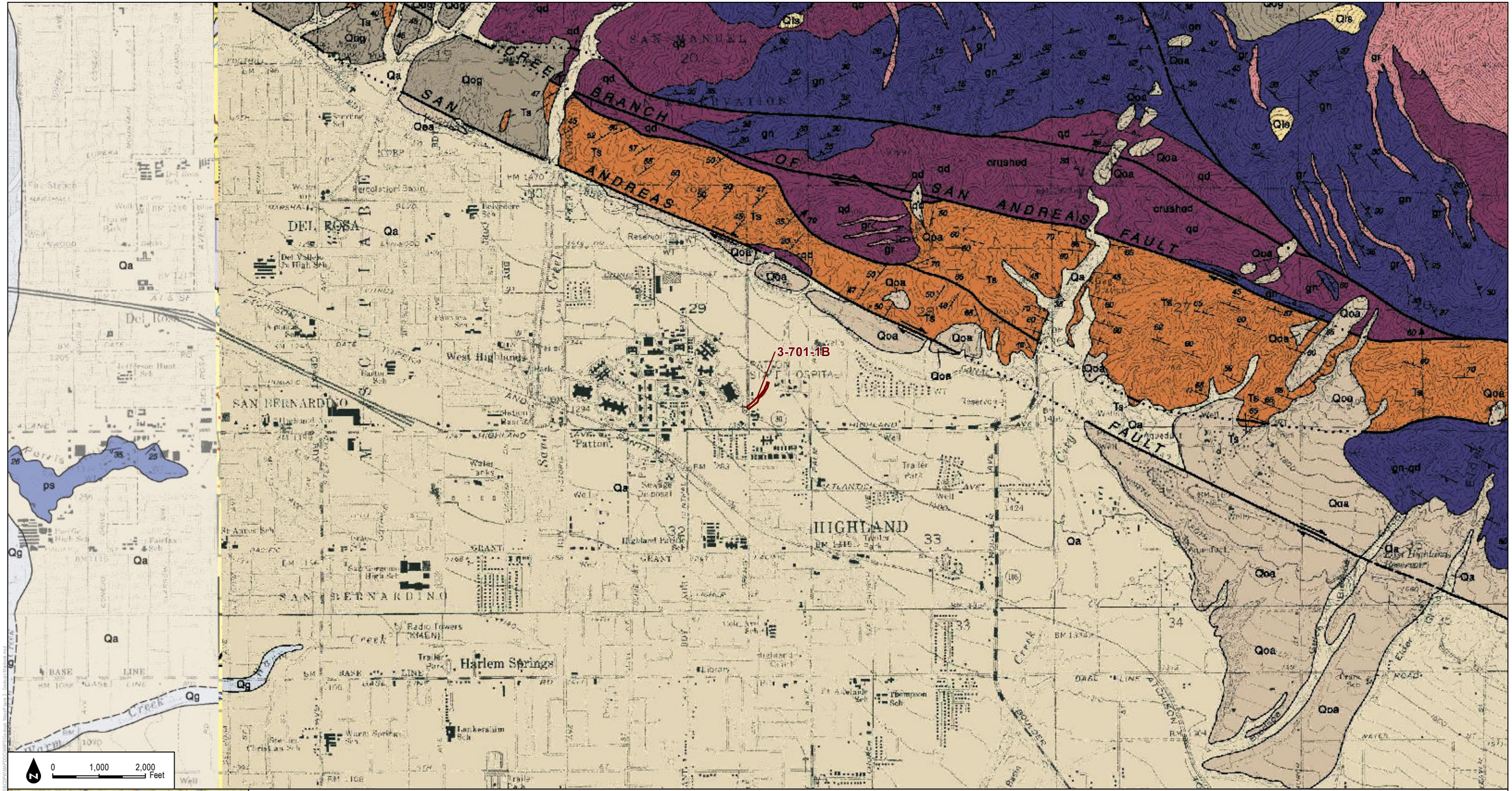
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

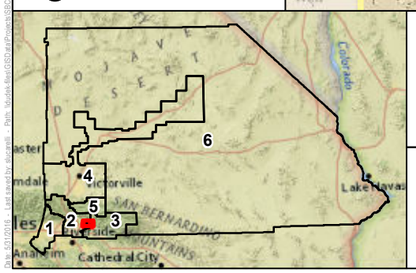
San Bernardino Department of Public Works

MAP 164

Zone 2 - Wiggins Basin #1

Geologic Map





Redbook Polygons

1:24,000

DUDEK

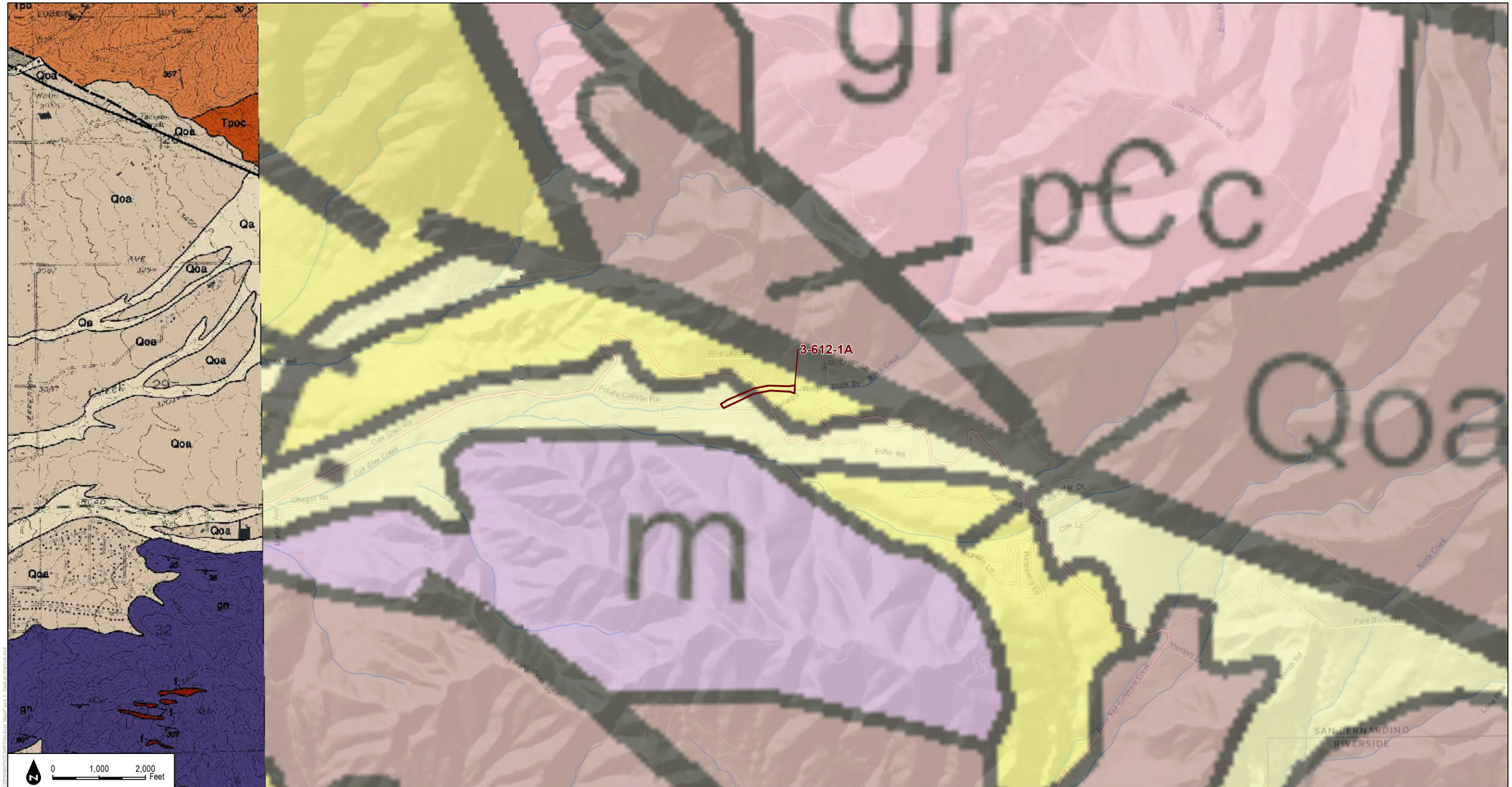
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

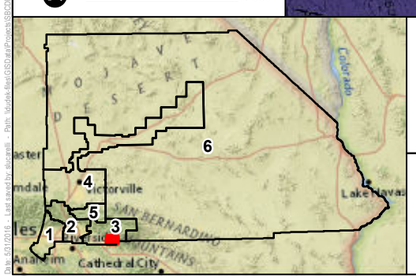
MAP 165

Zone 3 - Baldridge Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

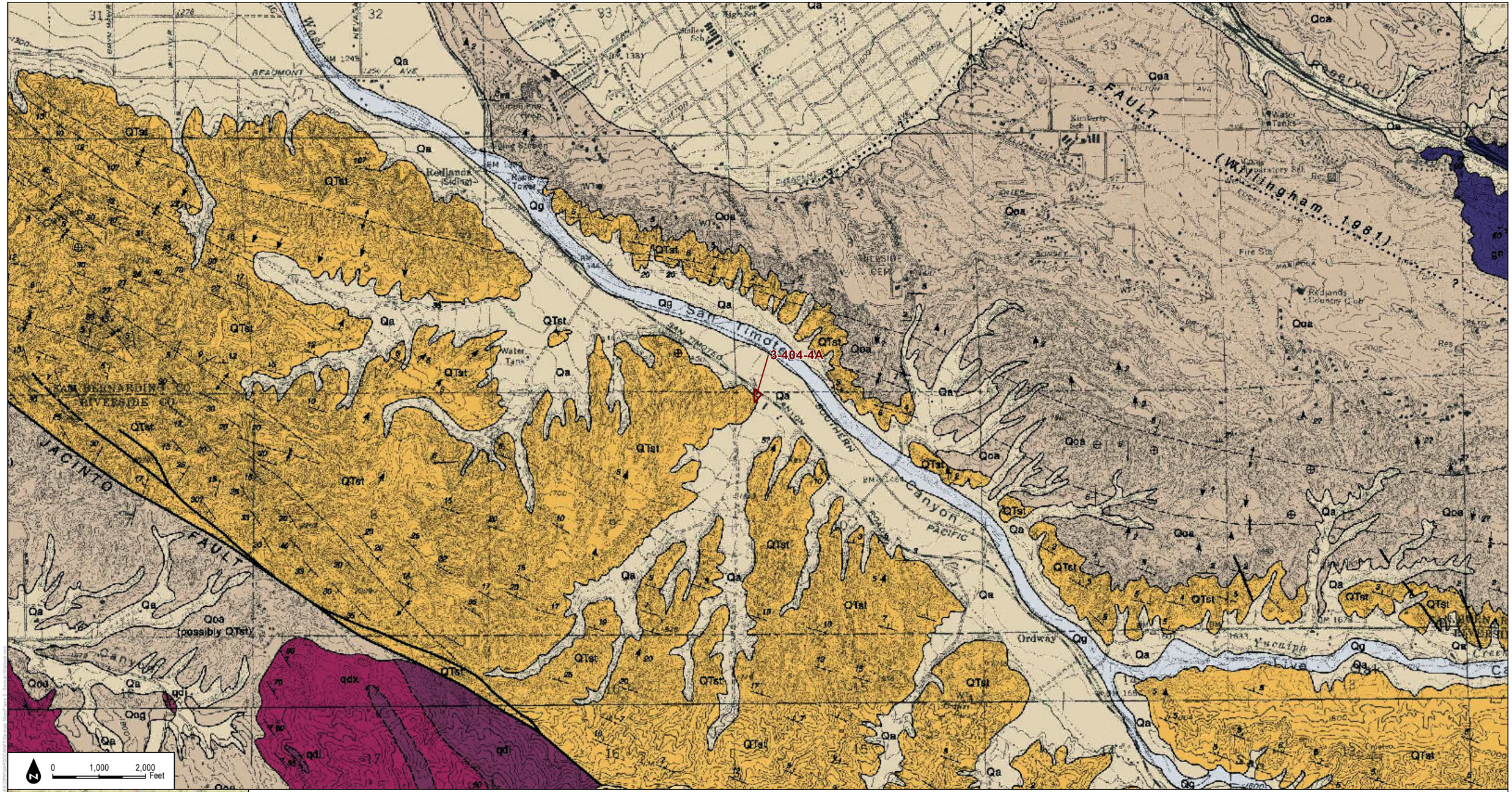
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

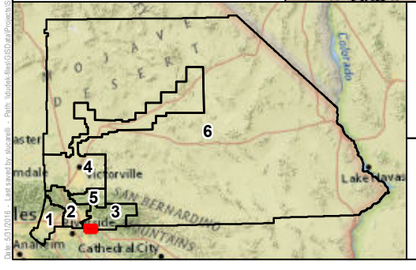
MAP 166

Zone 3 - Birch Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

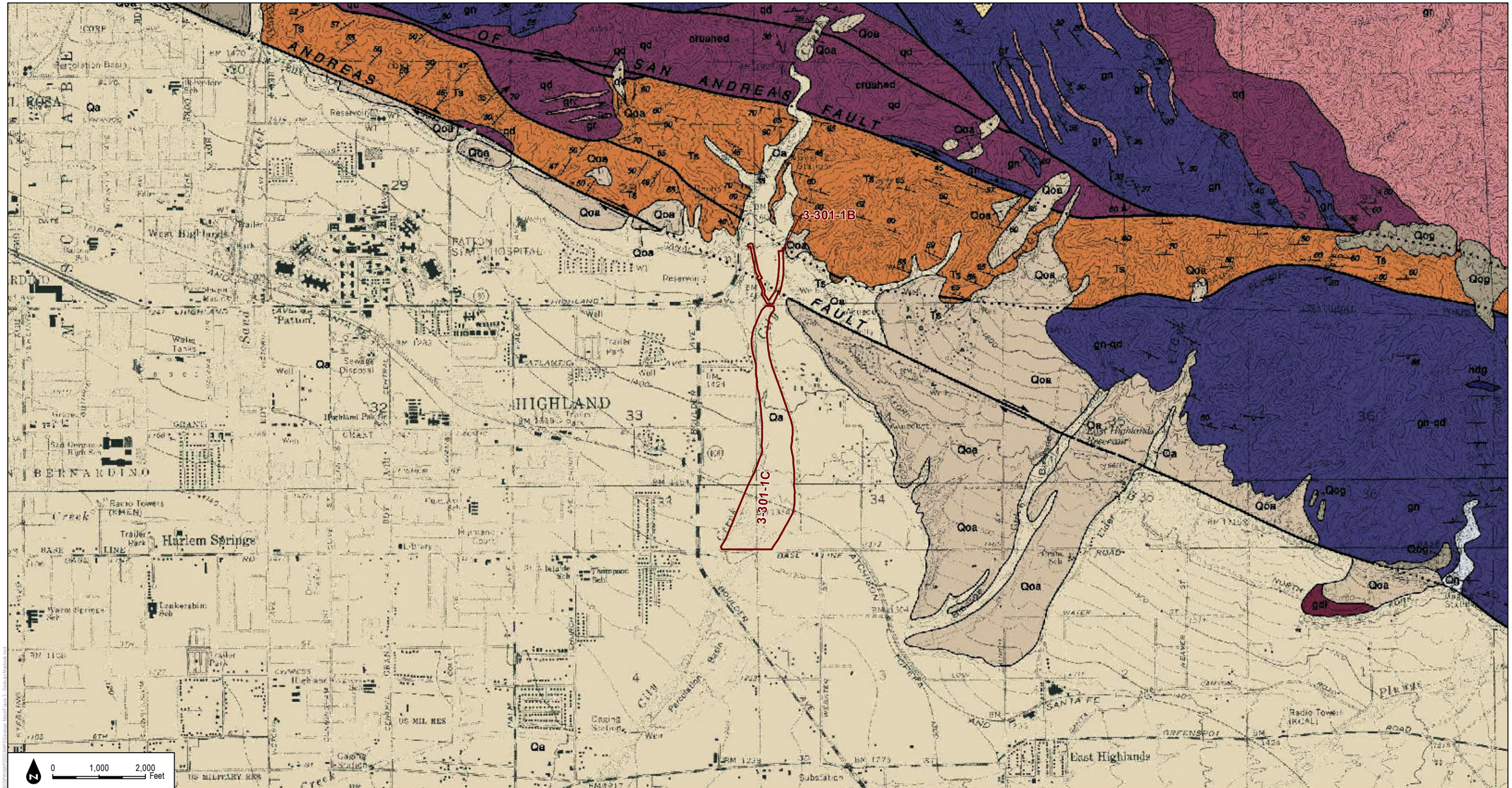
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

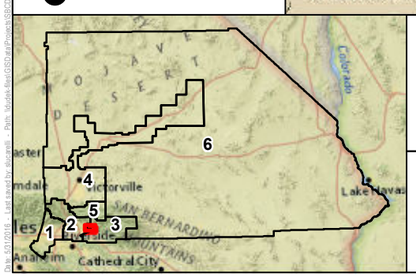
MAP 167

Zone 3 - Brown Ditch Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

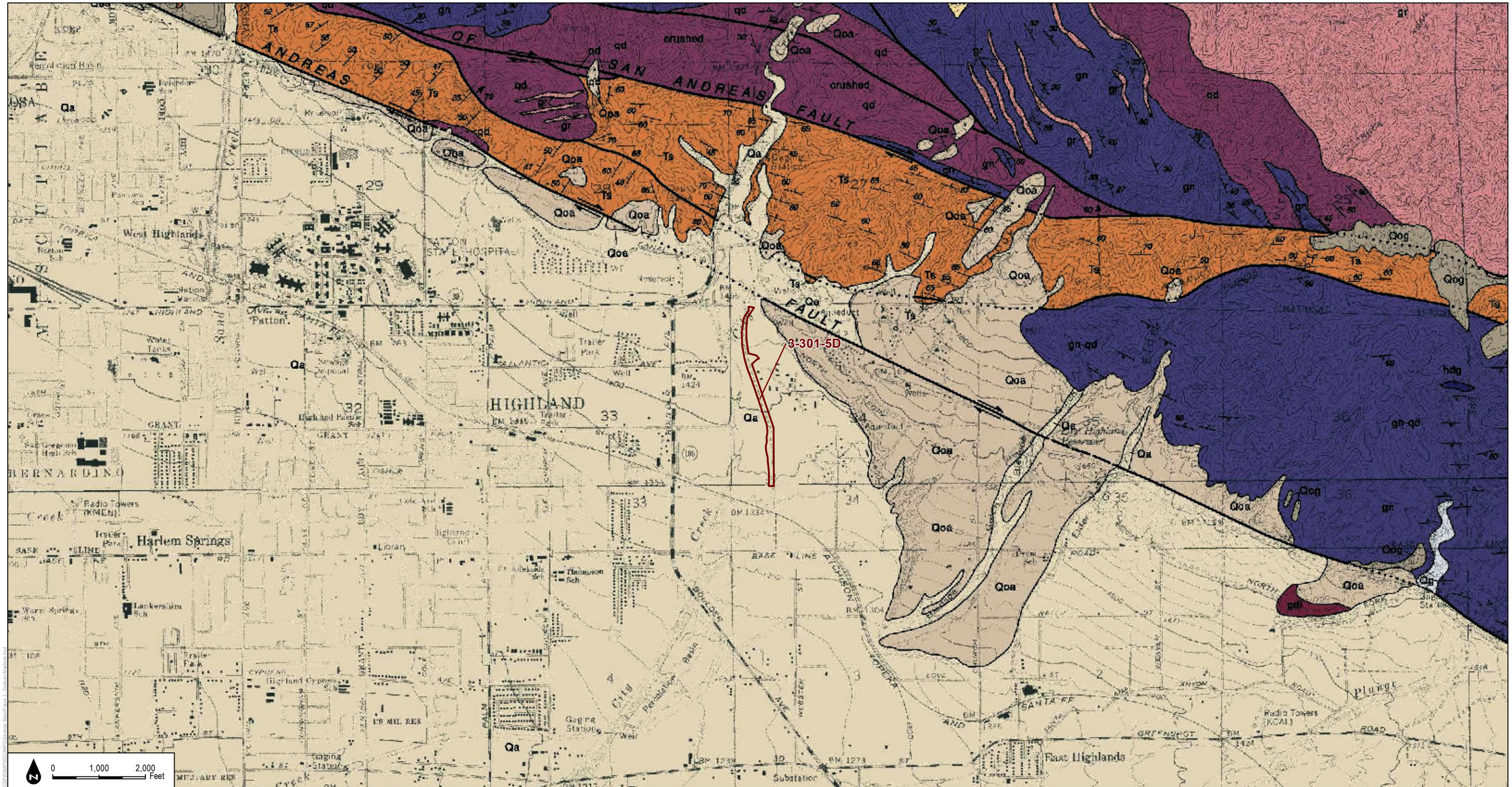
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

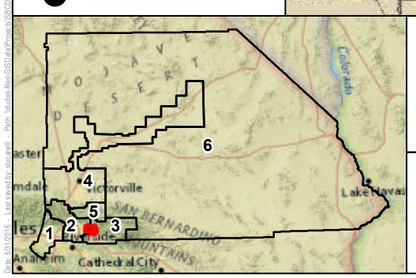
MAP 168

Zone 3 - City Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

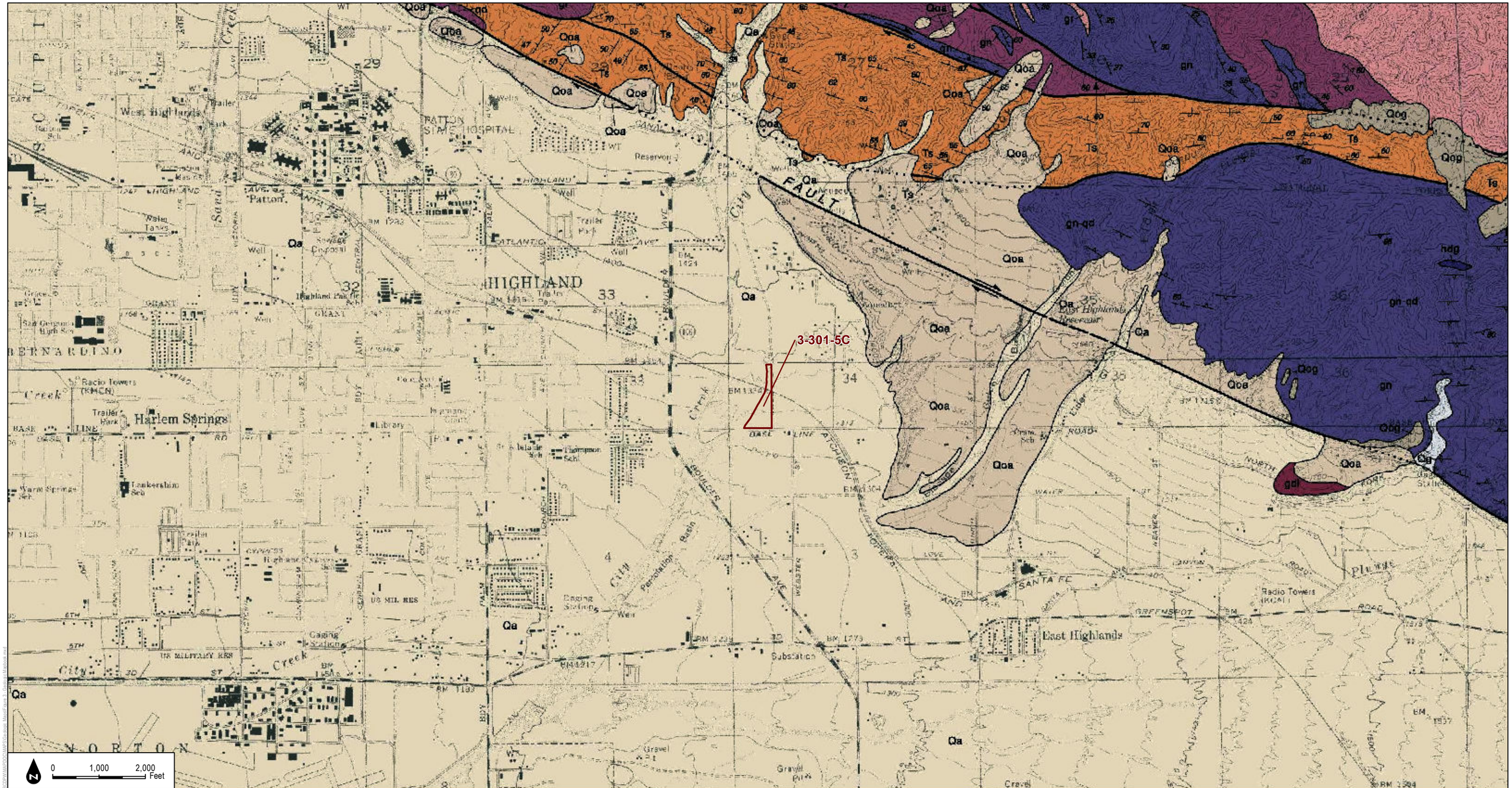
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

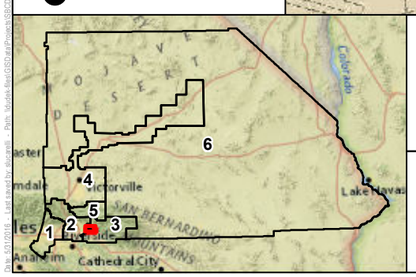
MAP 169

Zone 3 - City Creek Levee - East Bank

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

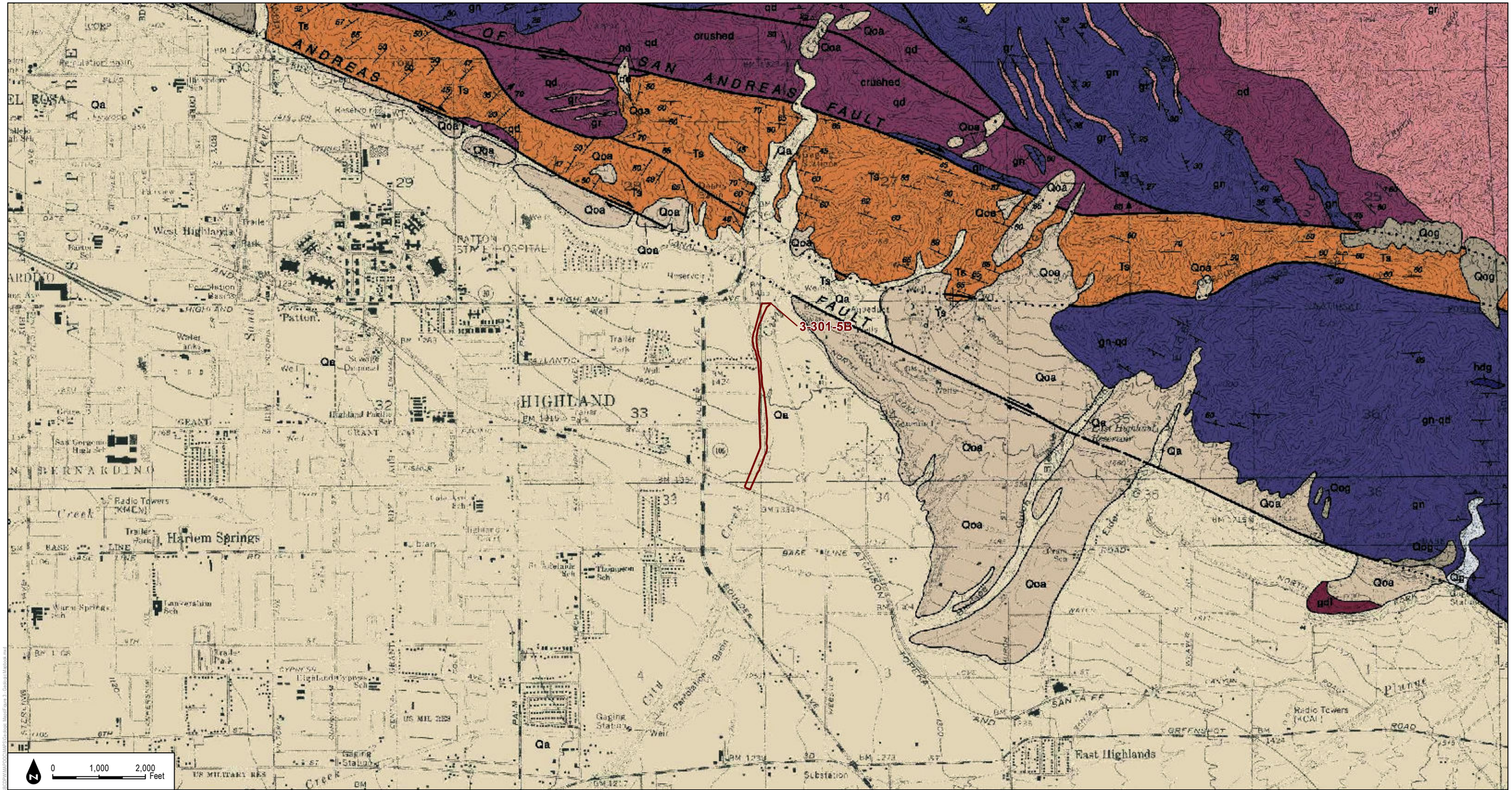
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

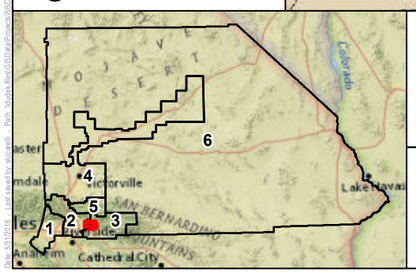
MAP 170

Zone 3 - City Creek Levee - East Bank (COE)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

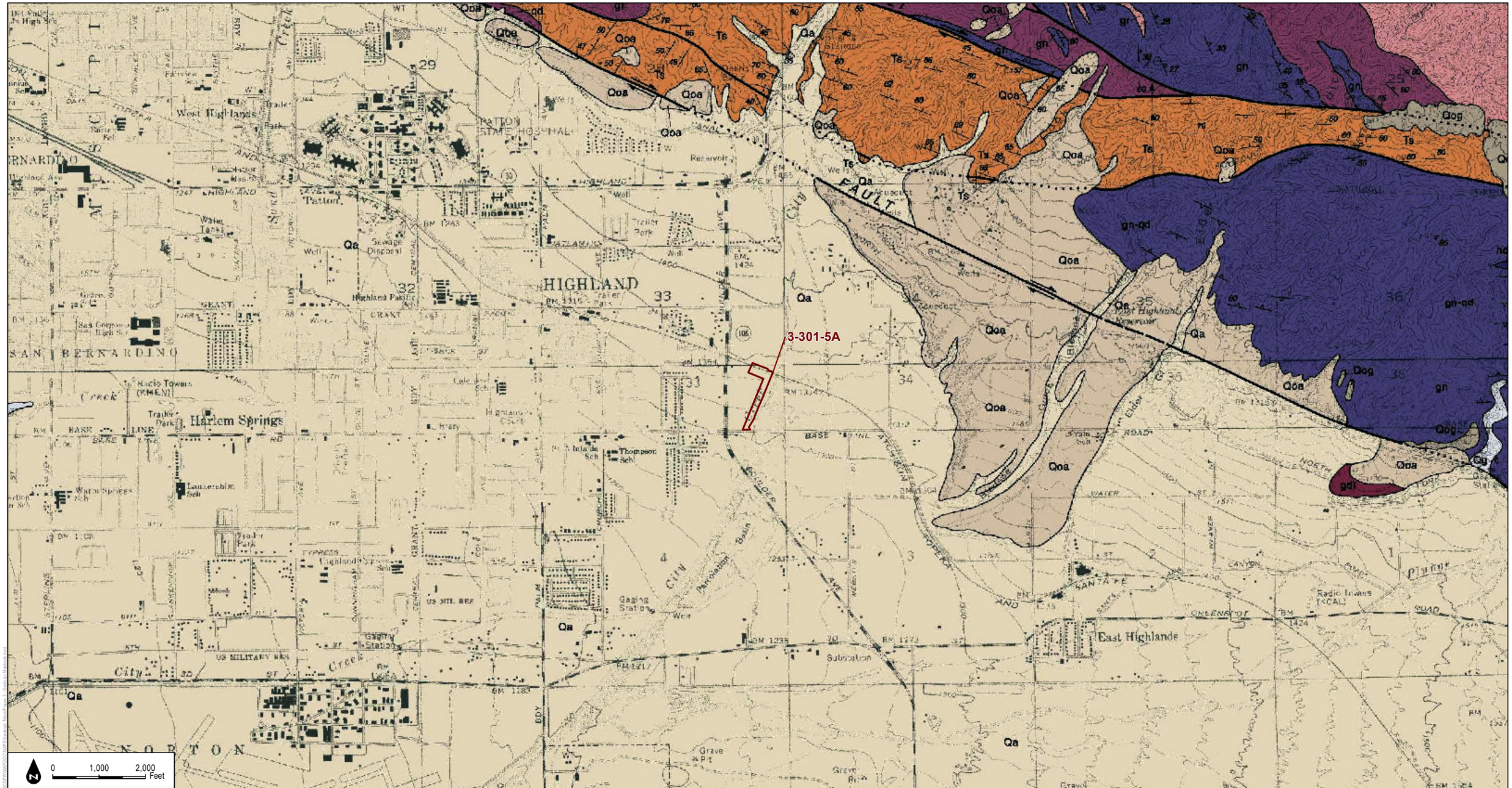
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

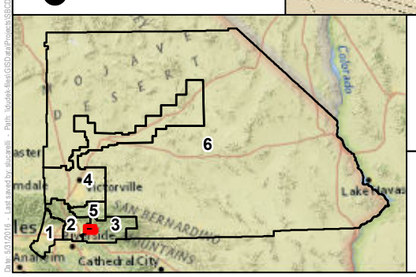
MAP 171

Zone 3 - City Creek Levee - West Bank

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

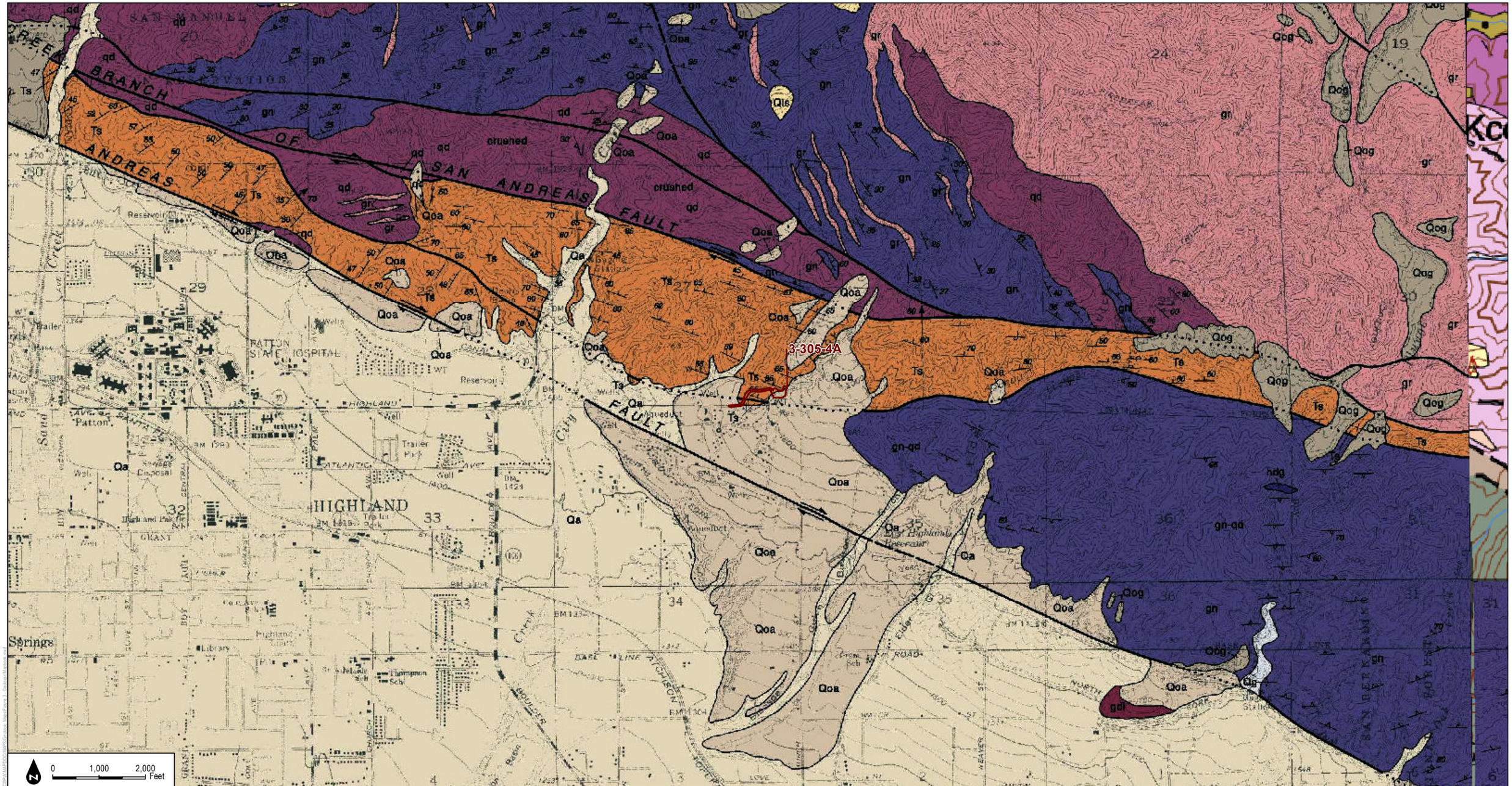
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

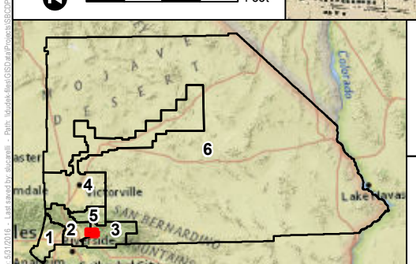
MAP 172

Zone 3 - City Creek Levee - West Bank (COE)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

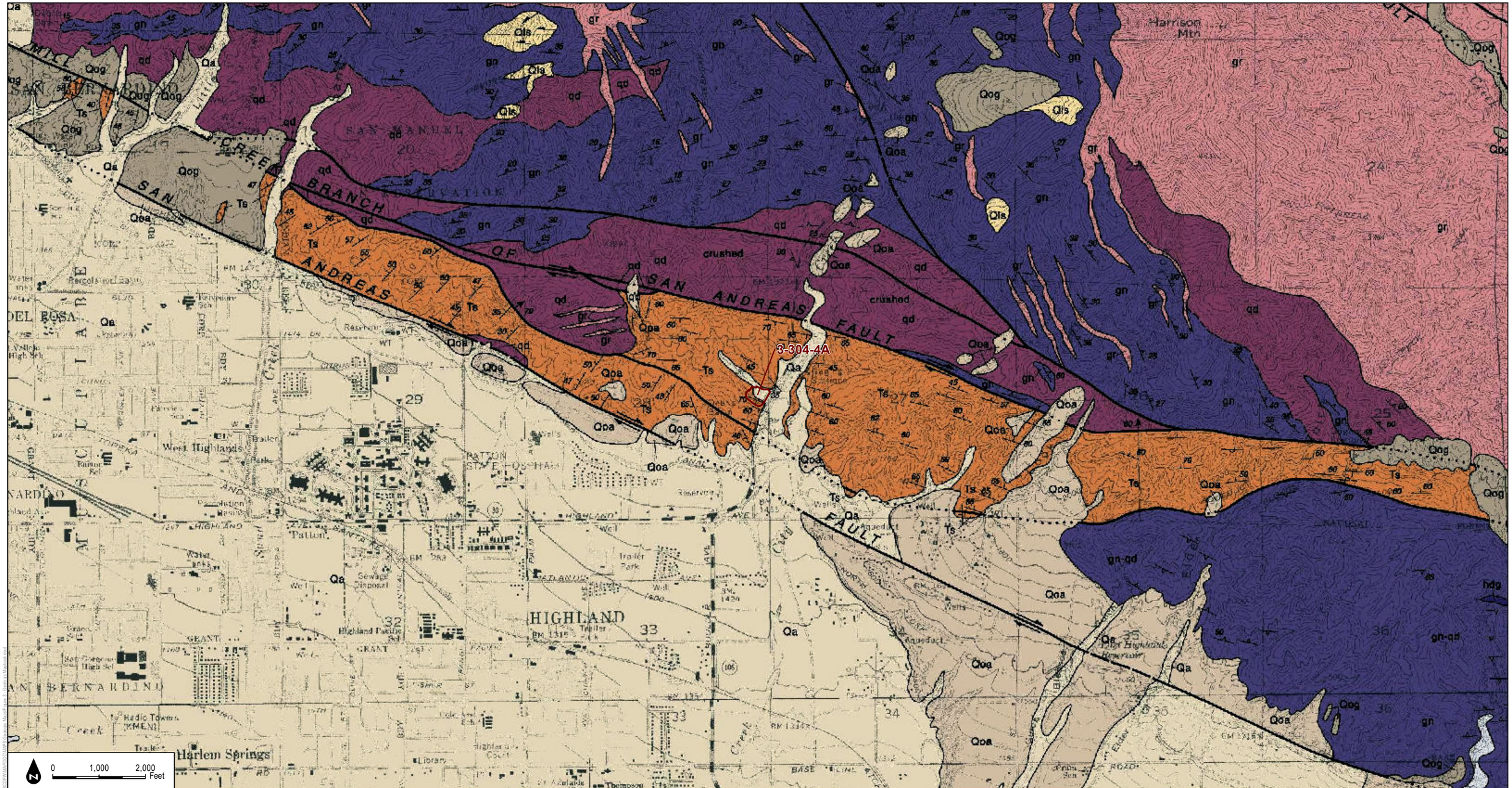
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

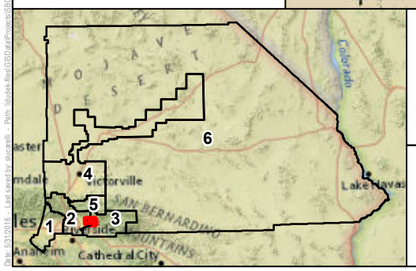
MAP 173

Zone 3 - Cook Canyon Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

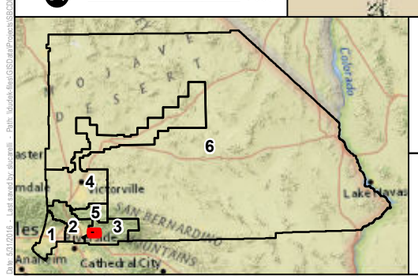
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 174

Zone 3 - Dynamite Basin

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

1:24,000

DUDEK

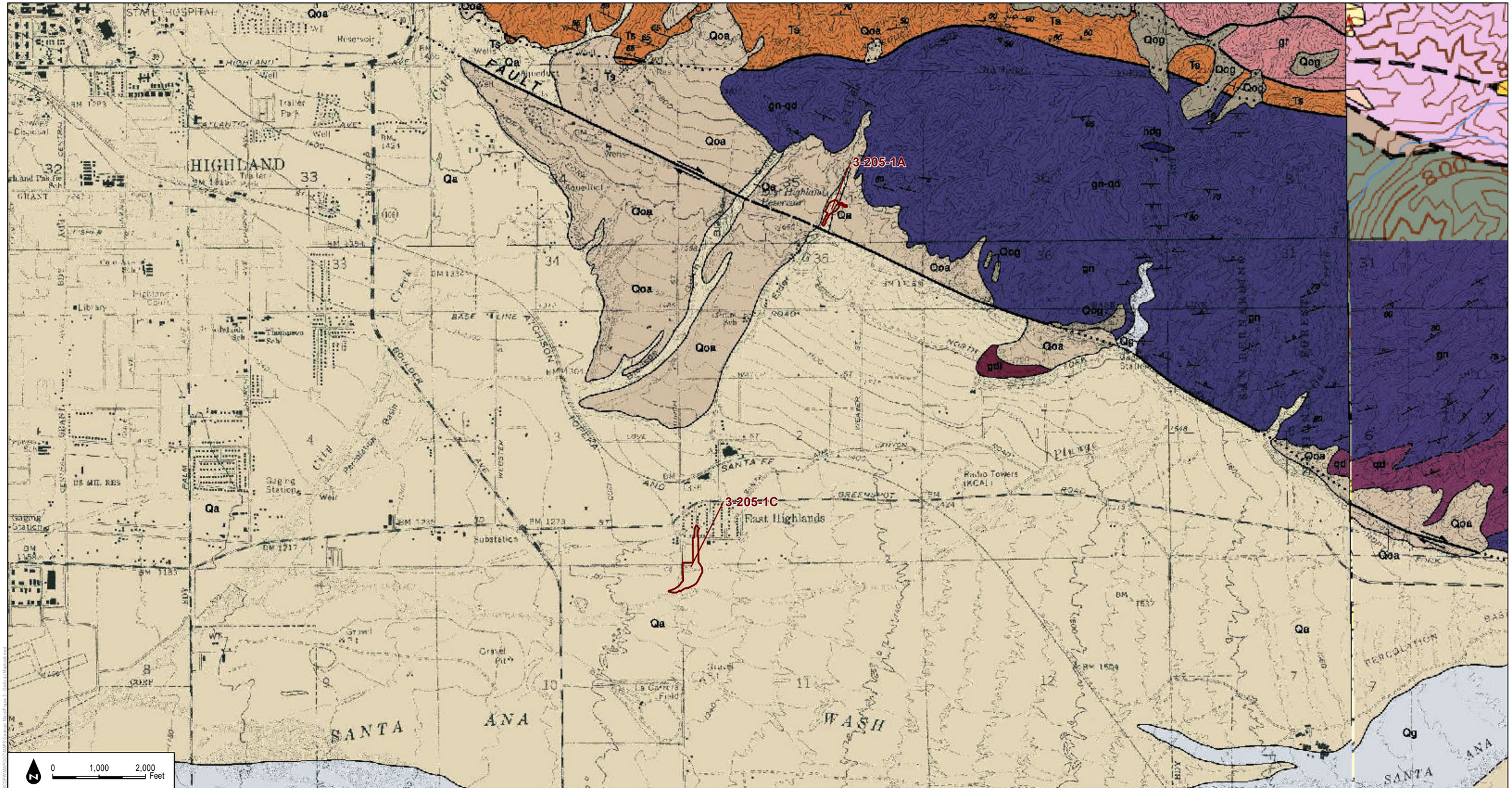
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

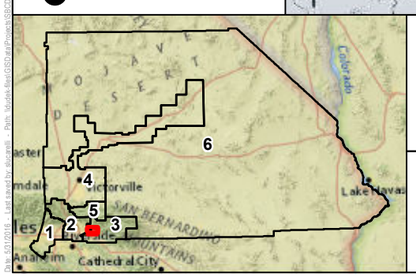
MAP 175

Zone 3 - East Highland SD

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

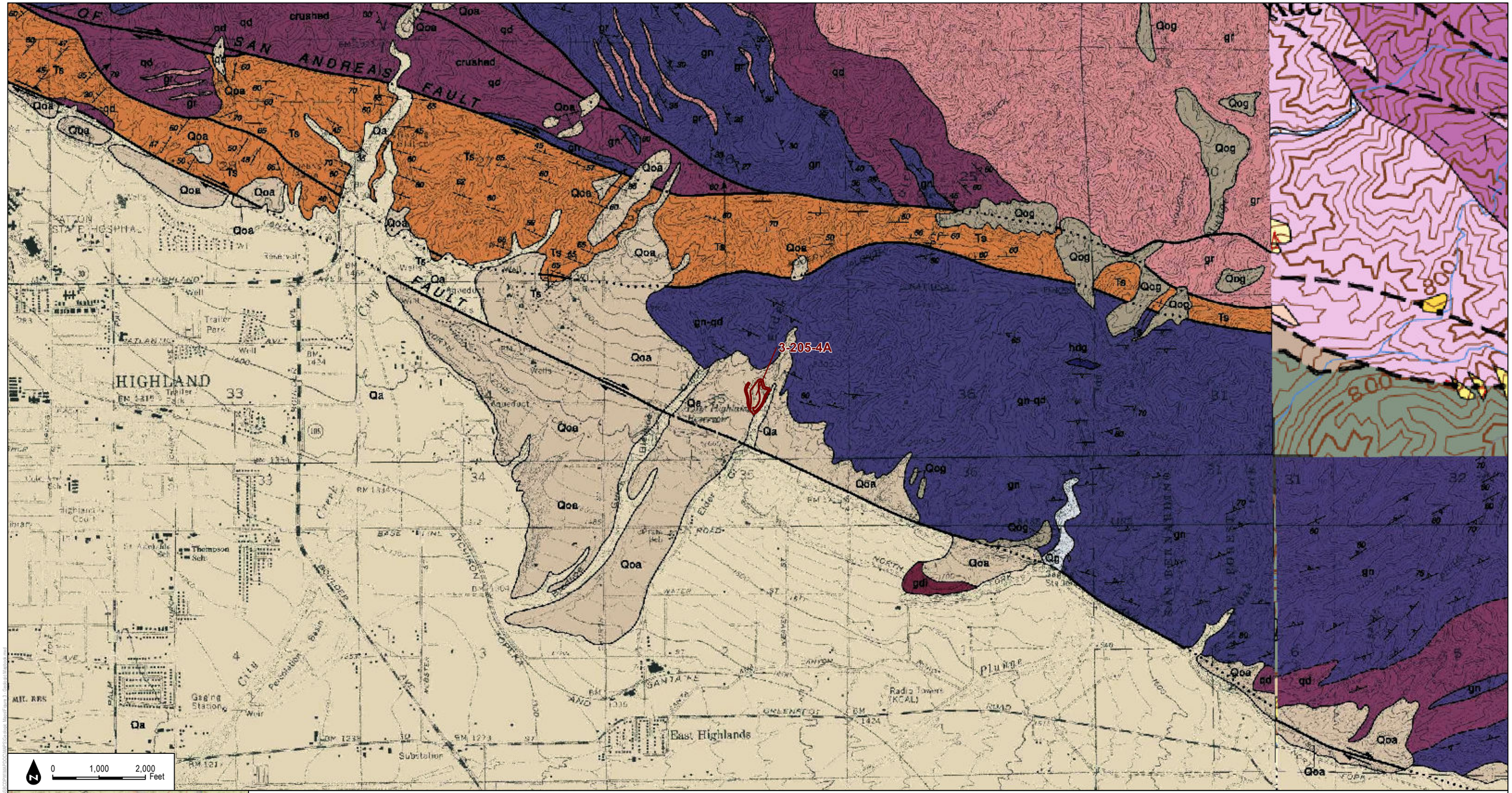
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

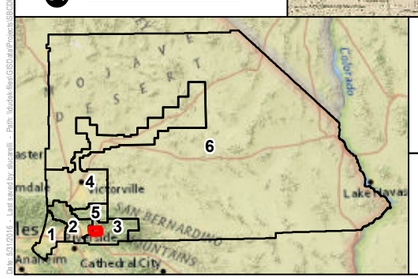
MAP 176

Zone 3 - Elder Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

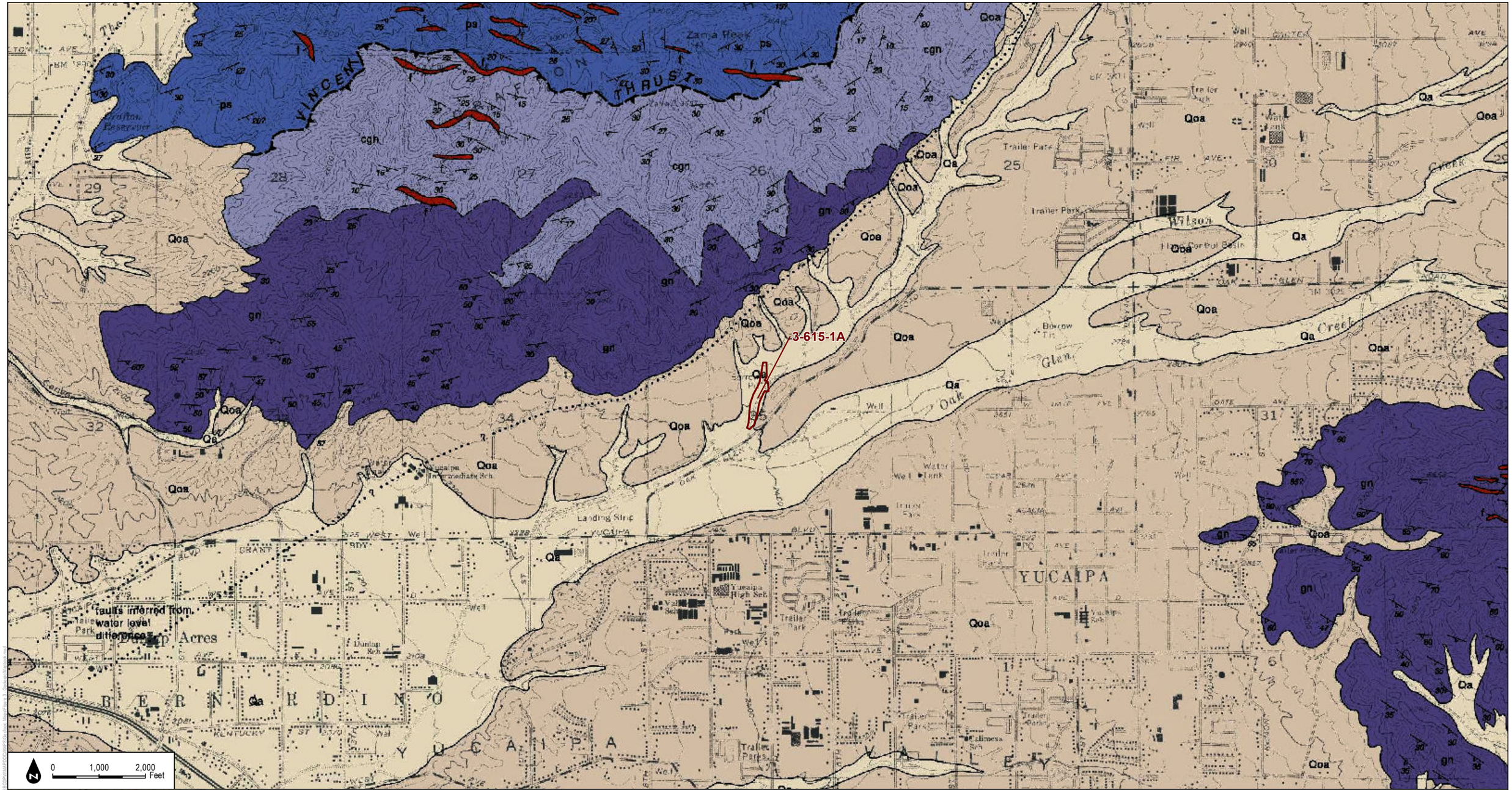
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

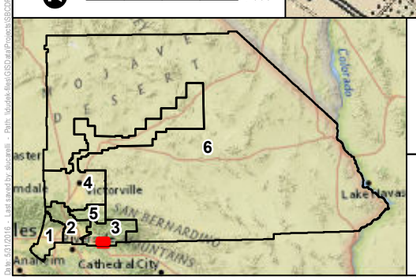
MAP 177

Zone 3 - Elder Creek Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

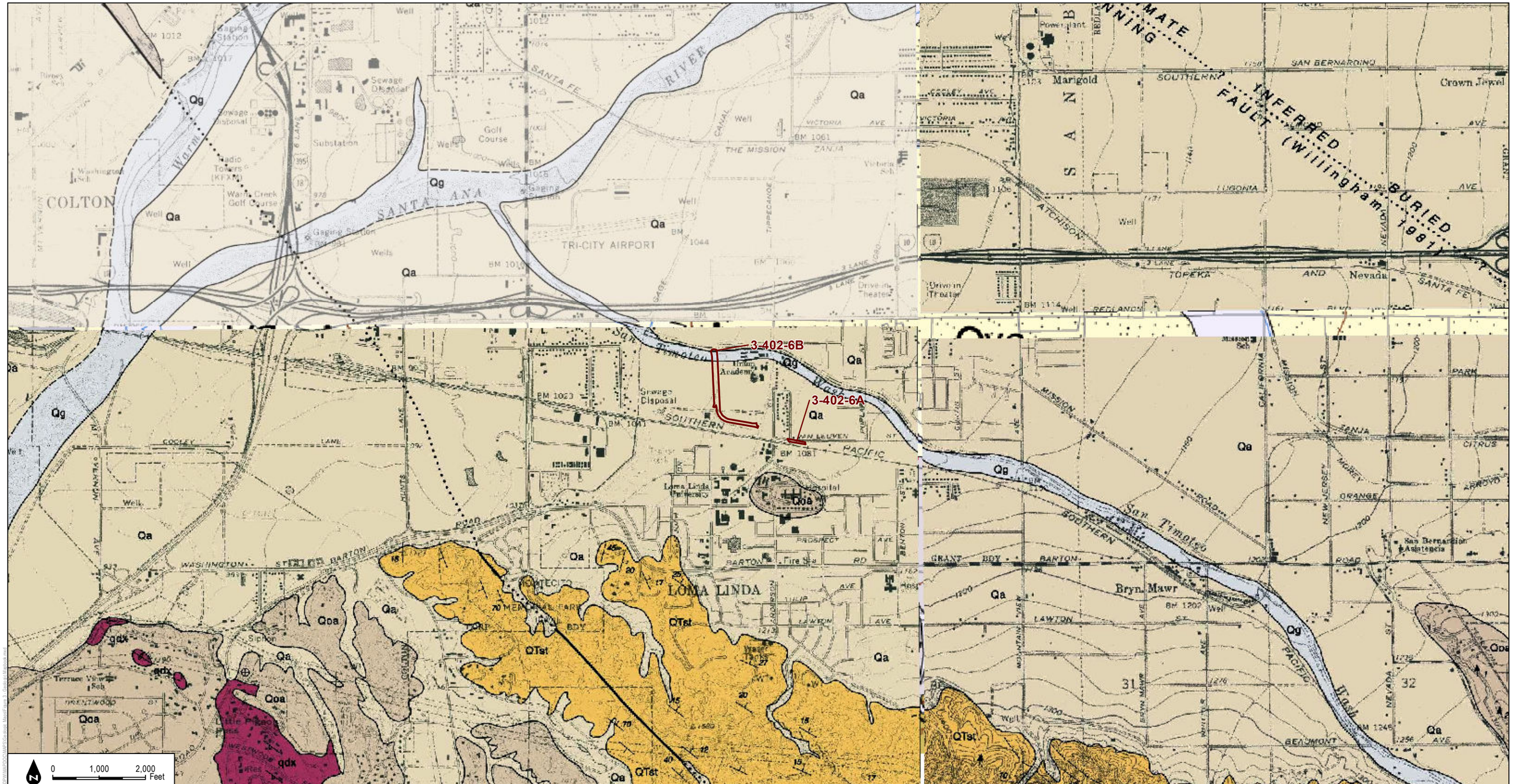
SOURCE: San Bernardino County Flood Control District, Dibblee / California Geological Society

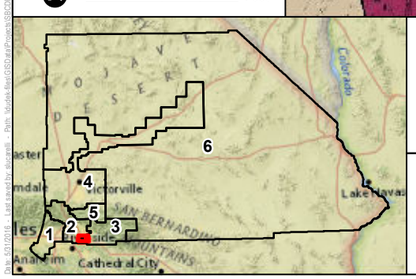
MAP 178

Zone 3 - Gateway Wash

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

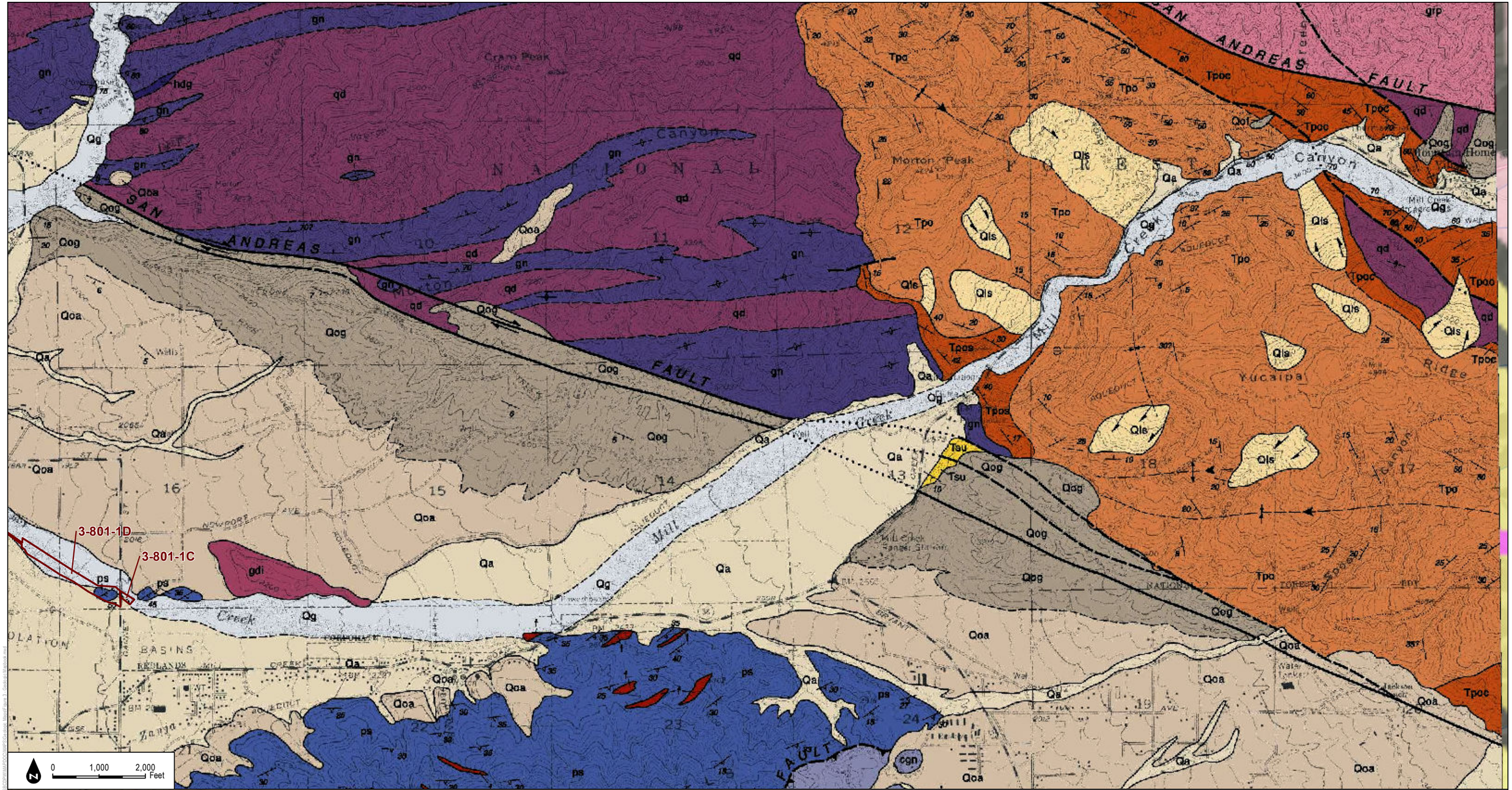
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

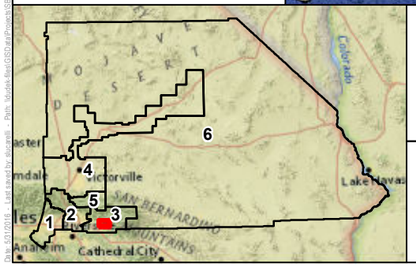
MAP 179

Zone 3 - Loma Linda SD

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

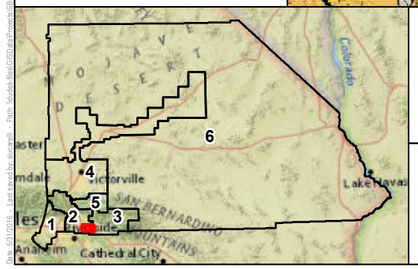
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 180

Zone 3 - Mill Creek

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

1:24,000

DUDEK

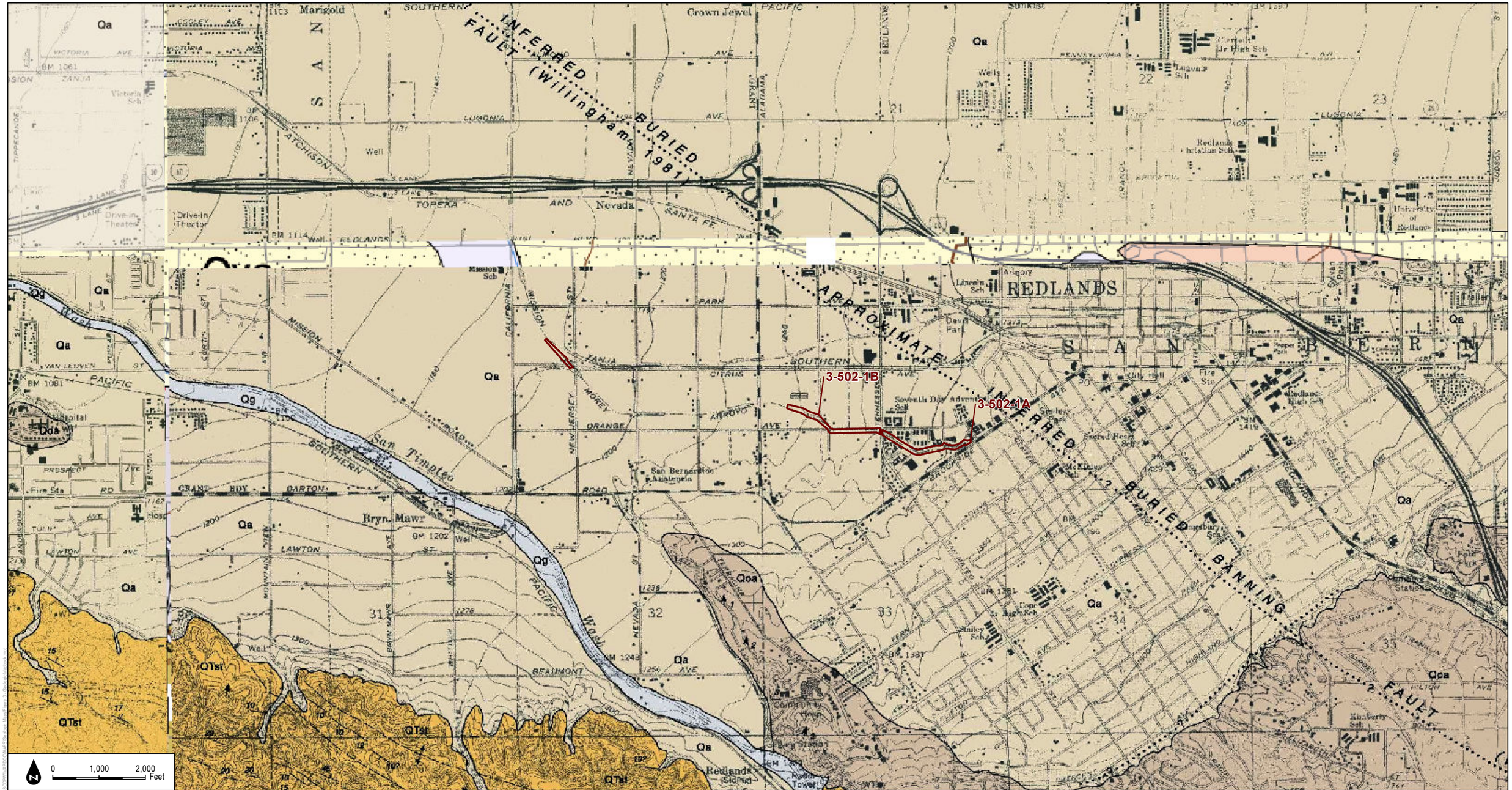
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

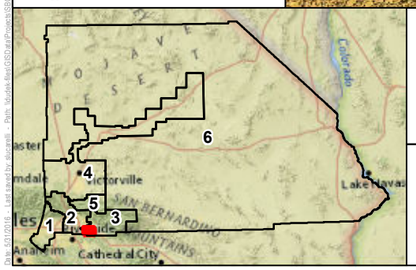
San Bernardino Department of Public Works

MAP 181

Zone 3 - Mission Channel

Geologic Map





Redbook Polygons

1:24,000

DUDEK

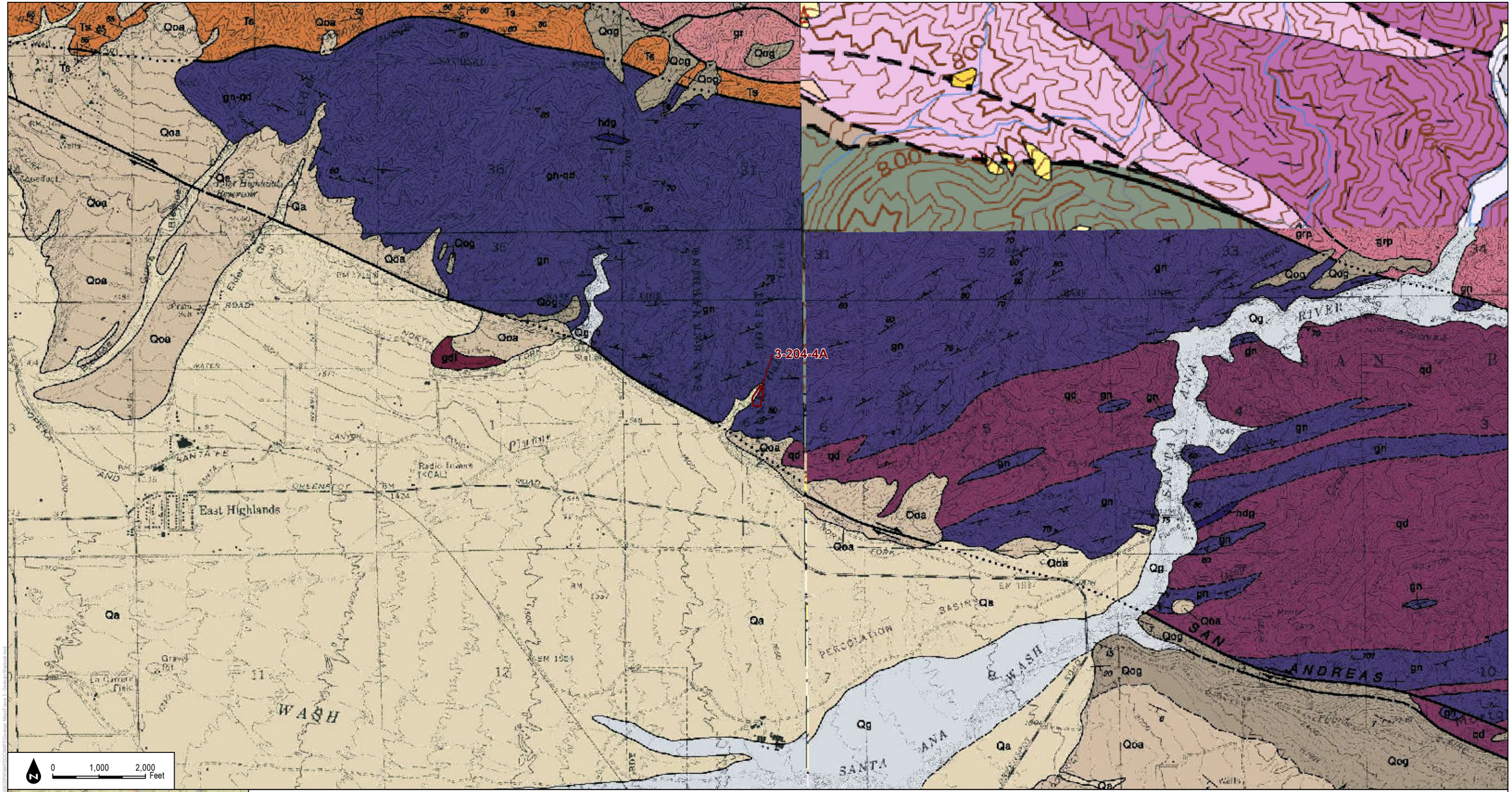
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

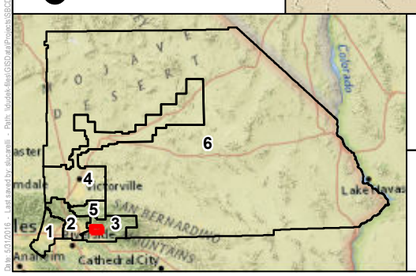
San Bernardino Department of Public Works

MAP 182

Zone 3 - Morrey Arroyo

Geologic Map





Redbook Polygons

1:24,000

DUDEK

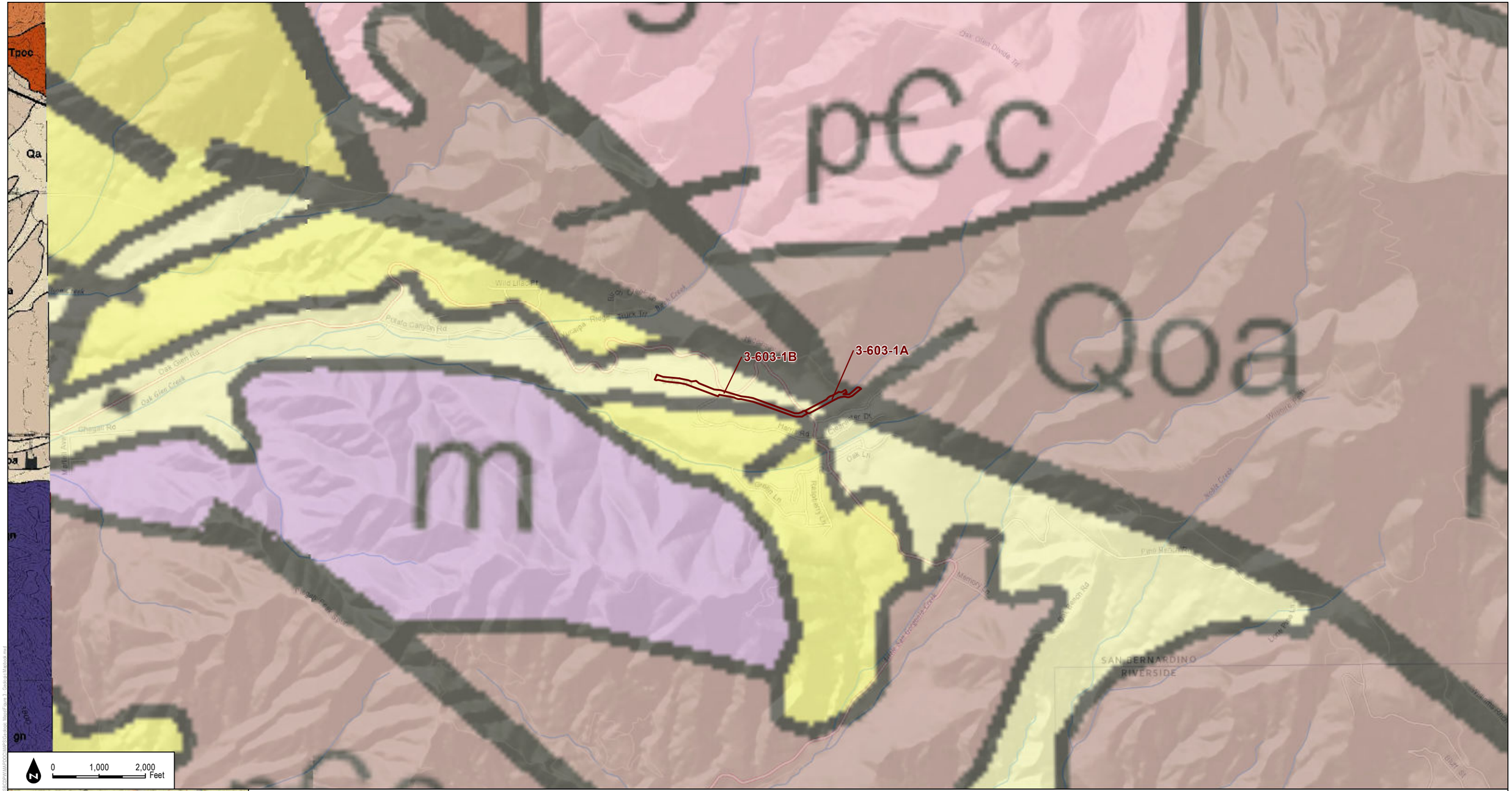
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

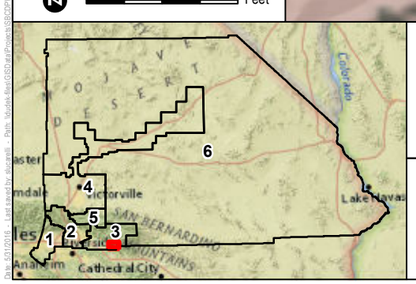
MAP 183

Zone 3 - Oak Creek Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

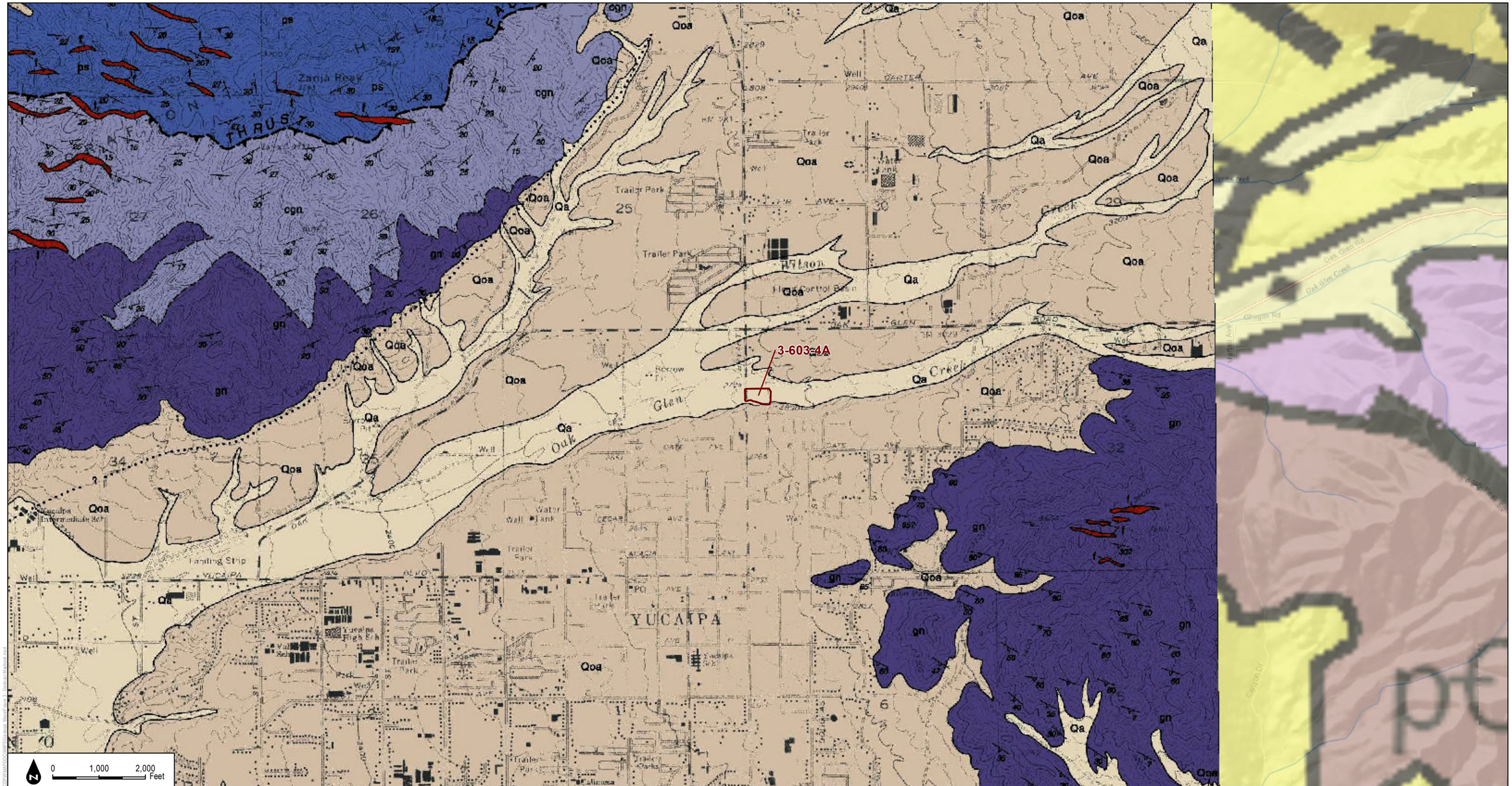
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

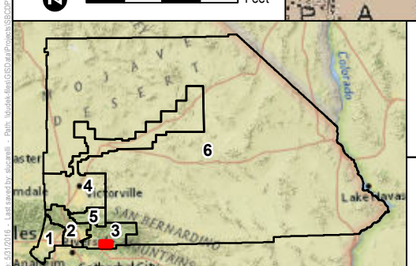
MAP 184

Zone 3 - Oak Glen Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

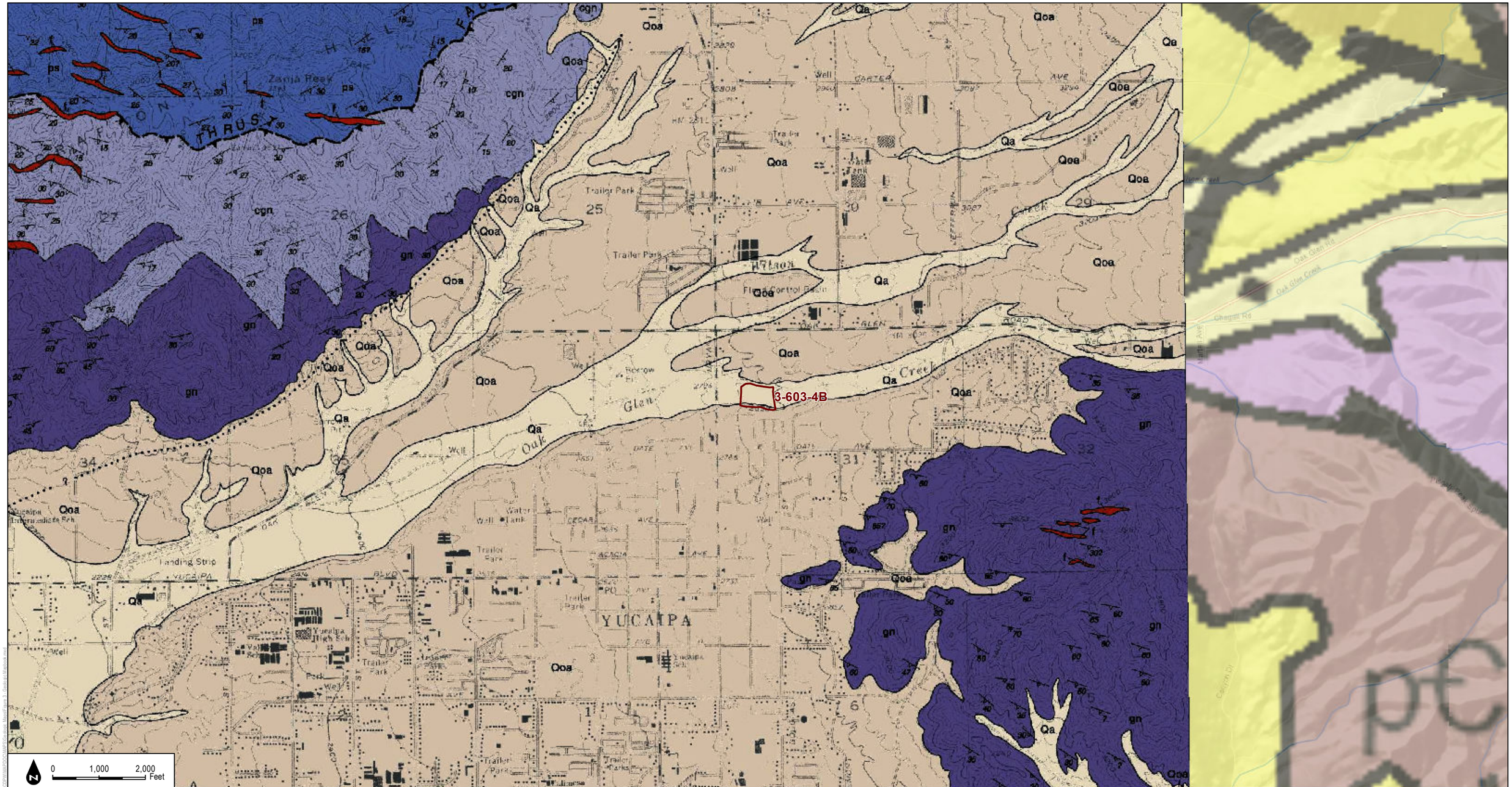
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

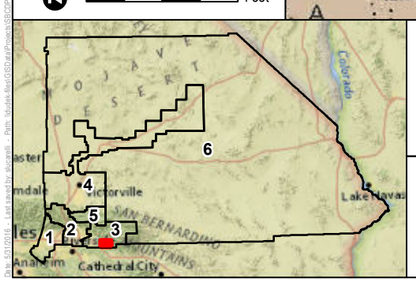
MAP 185

Zone 3 - Oak Glen Creek Basin #1

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

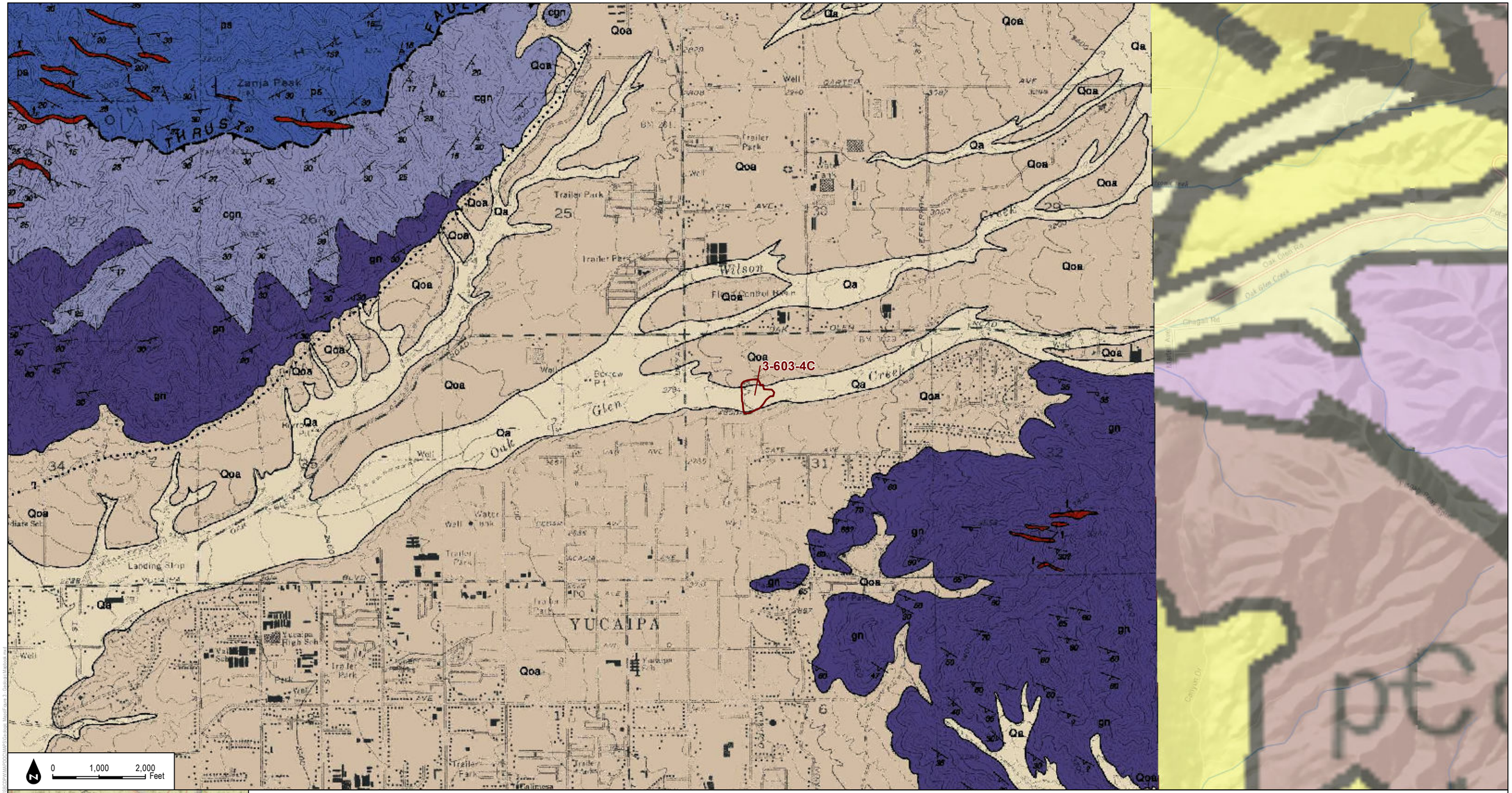
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

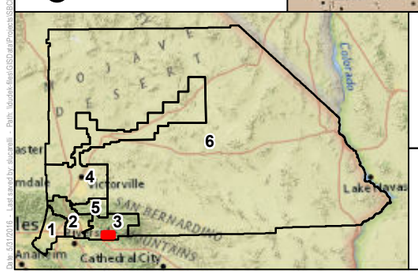
MAP 186

Zone 3 - Oak Glen Creek Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

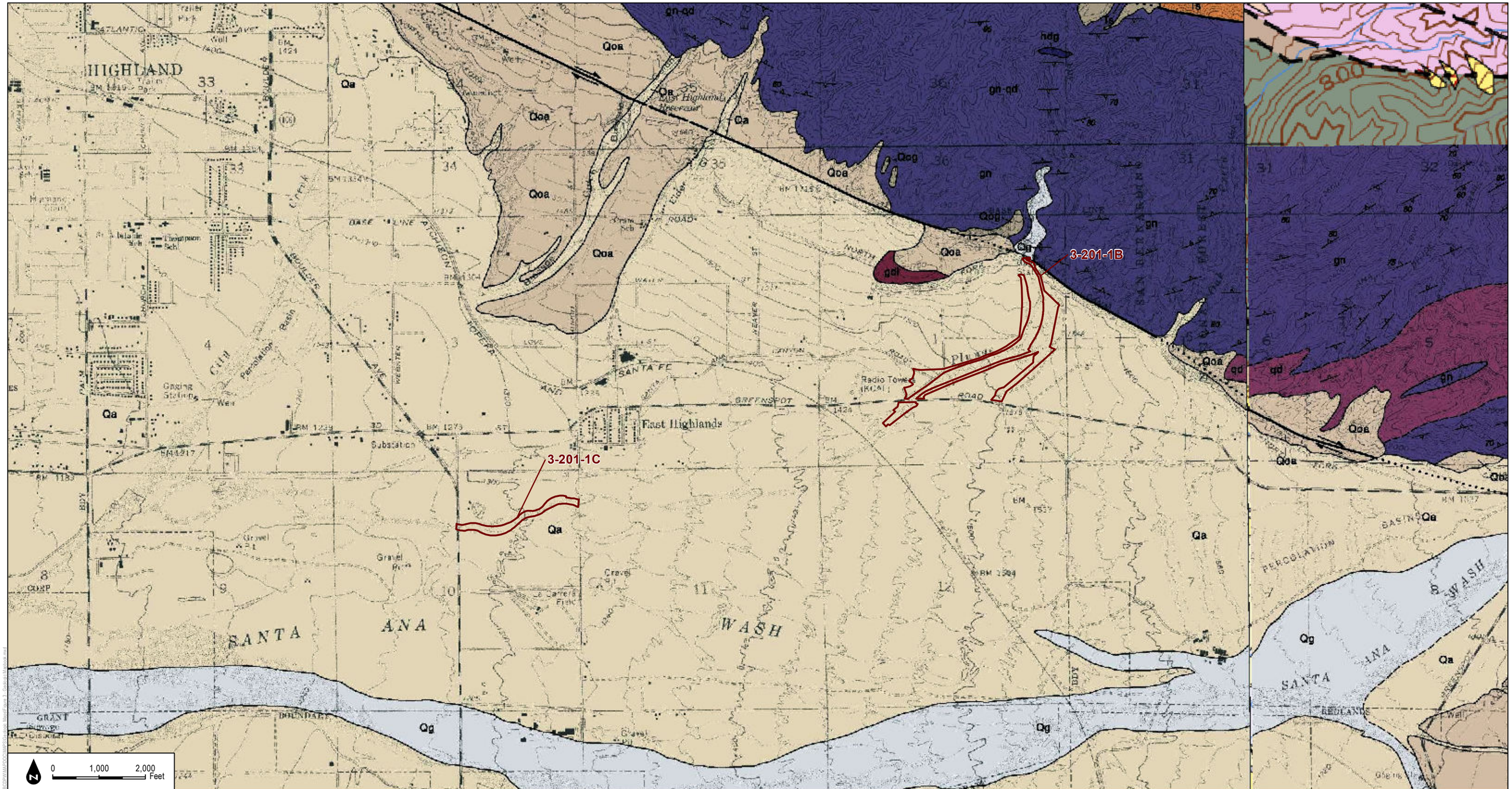
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

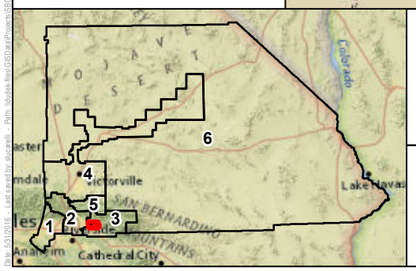
MAP 187

Zone 3 - Oak Glen Creek Basin #3

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

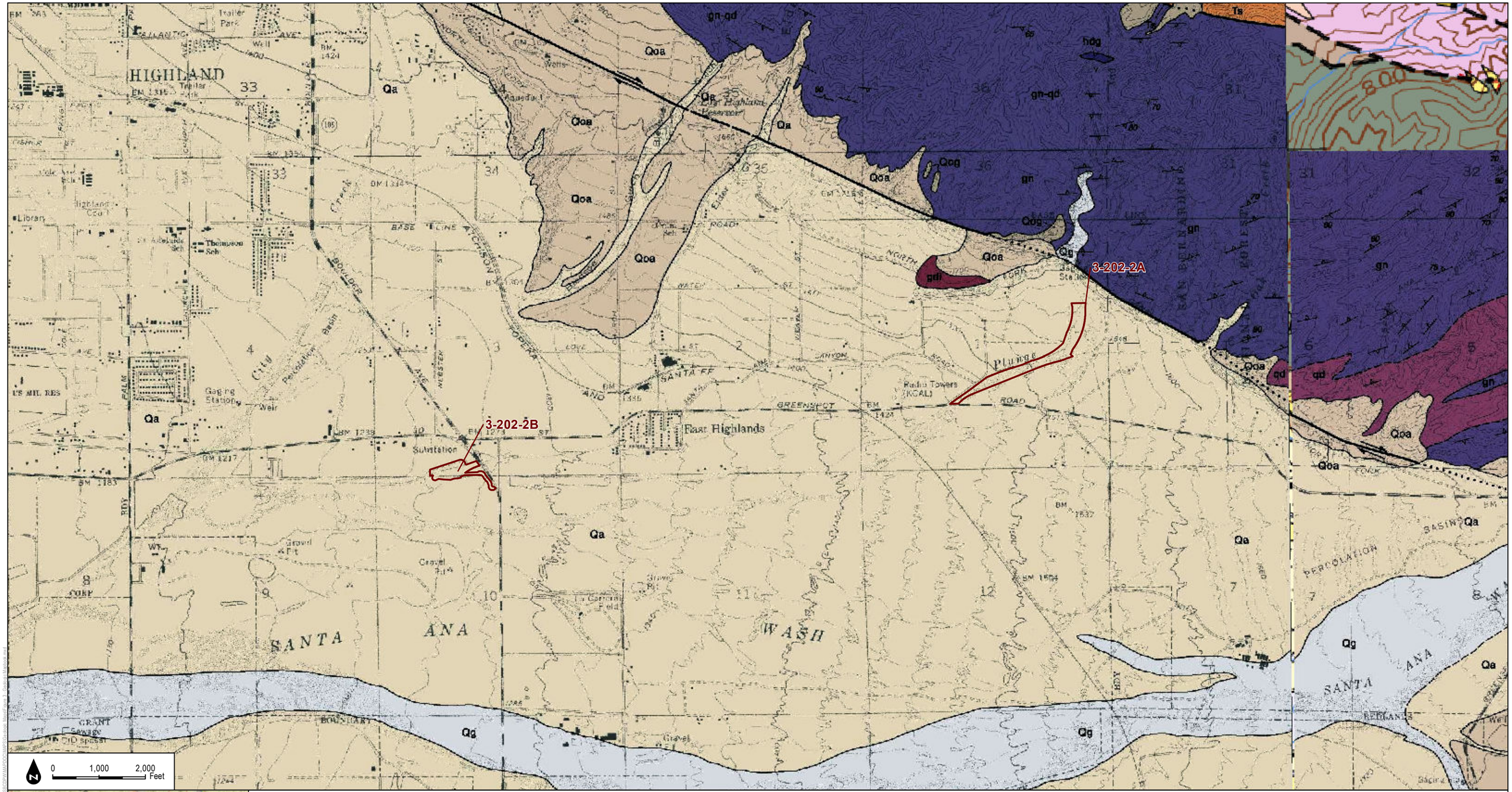
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

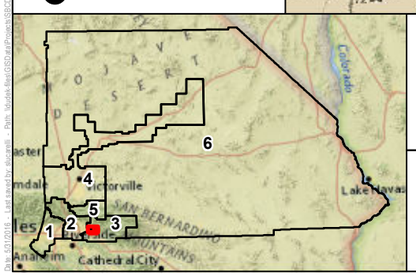
San Bernardino Department of Public Works

MAP 188

Zone 3 - Plunge Creek

Geologic Map





Redbook Polygons

1:24,000

DUDEK

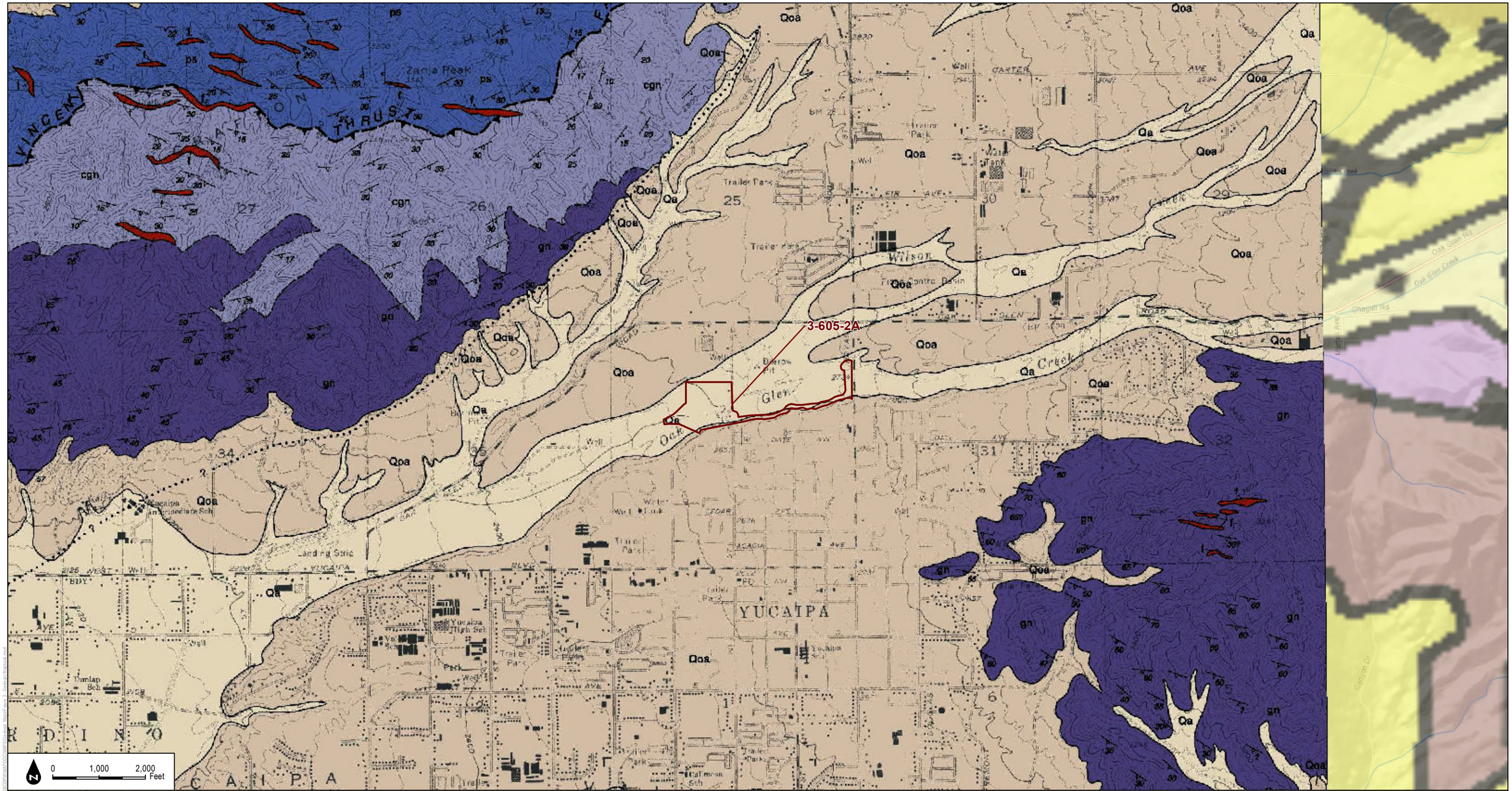
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

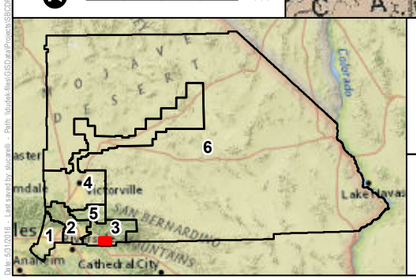
MAP 189

Zone 3 - Plunge Creek Spreading Grounds

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

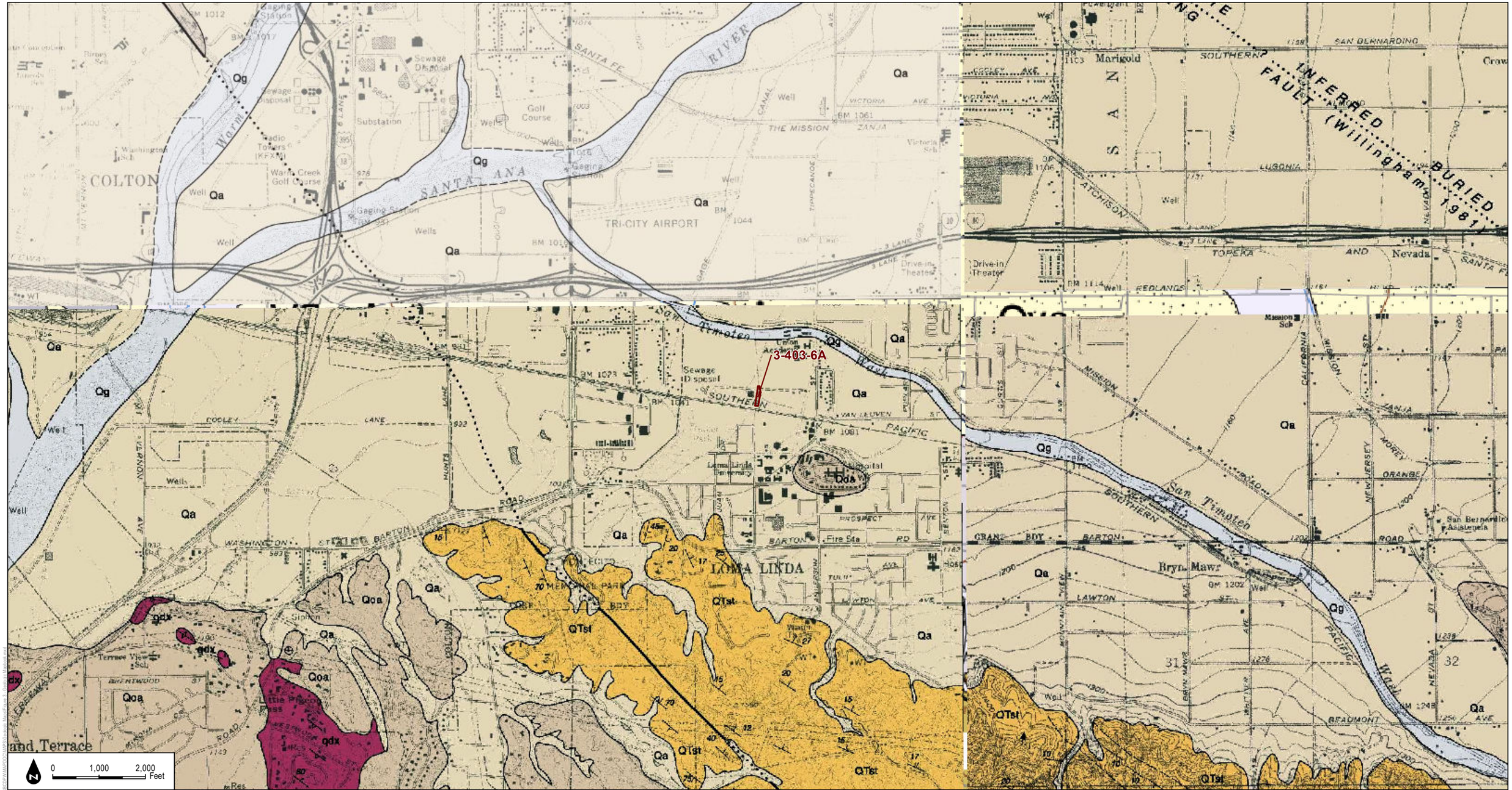
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

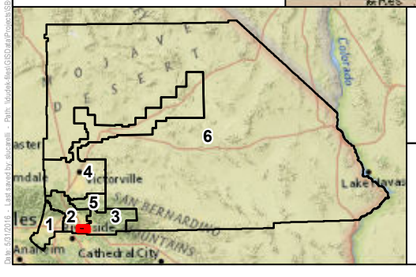
MAP 190

Zone 3 - Potato Creek Spreading Grounds

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

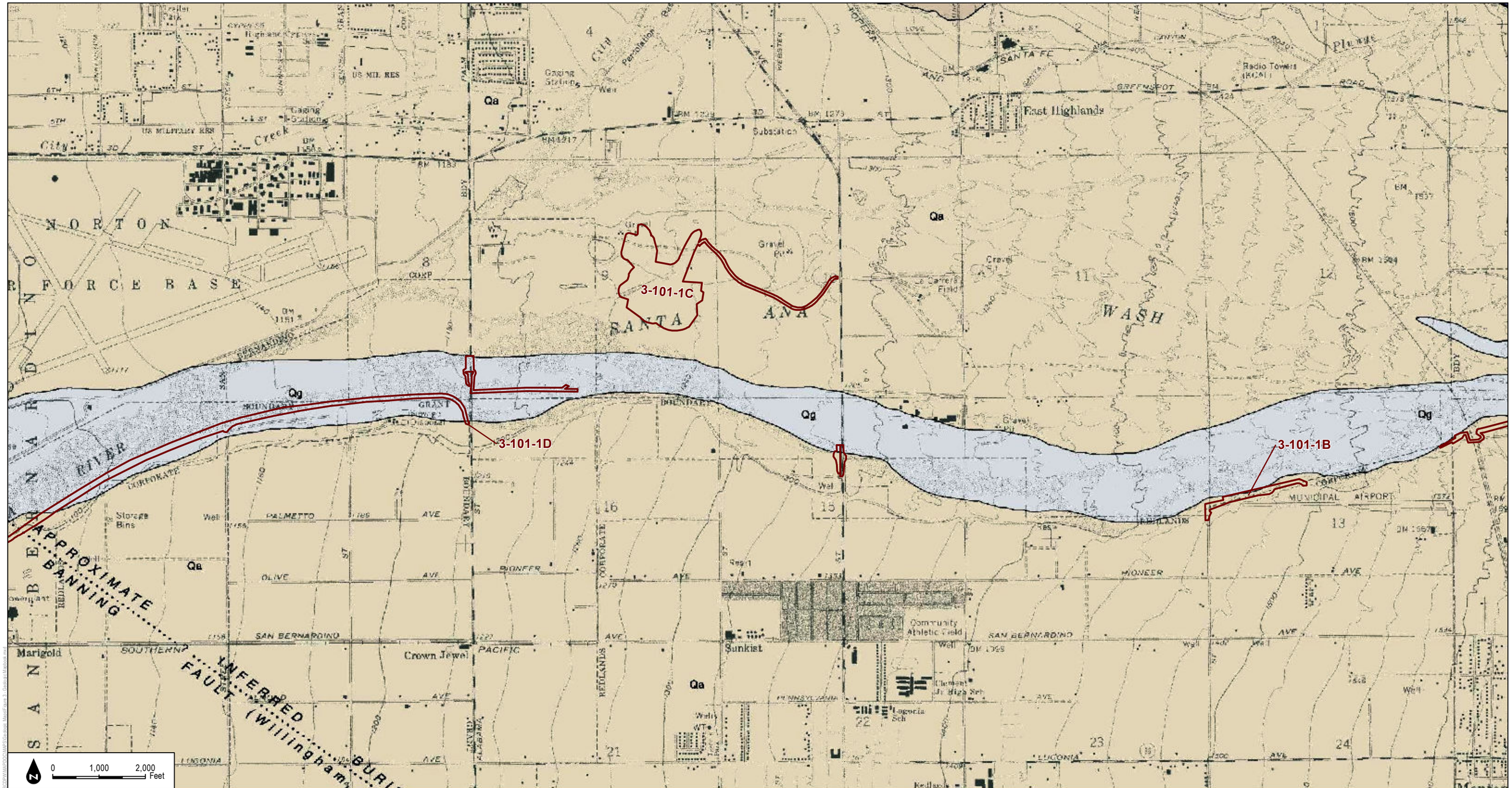
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

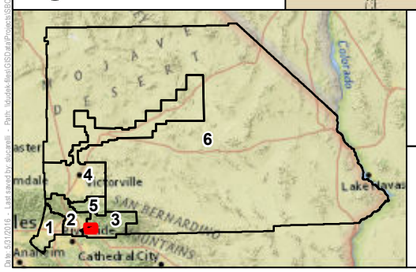
MAP 191

Zone 3 - San Bernardino Avenue SD

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

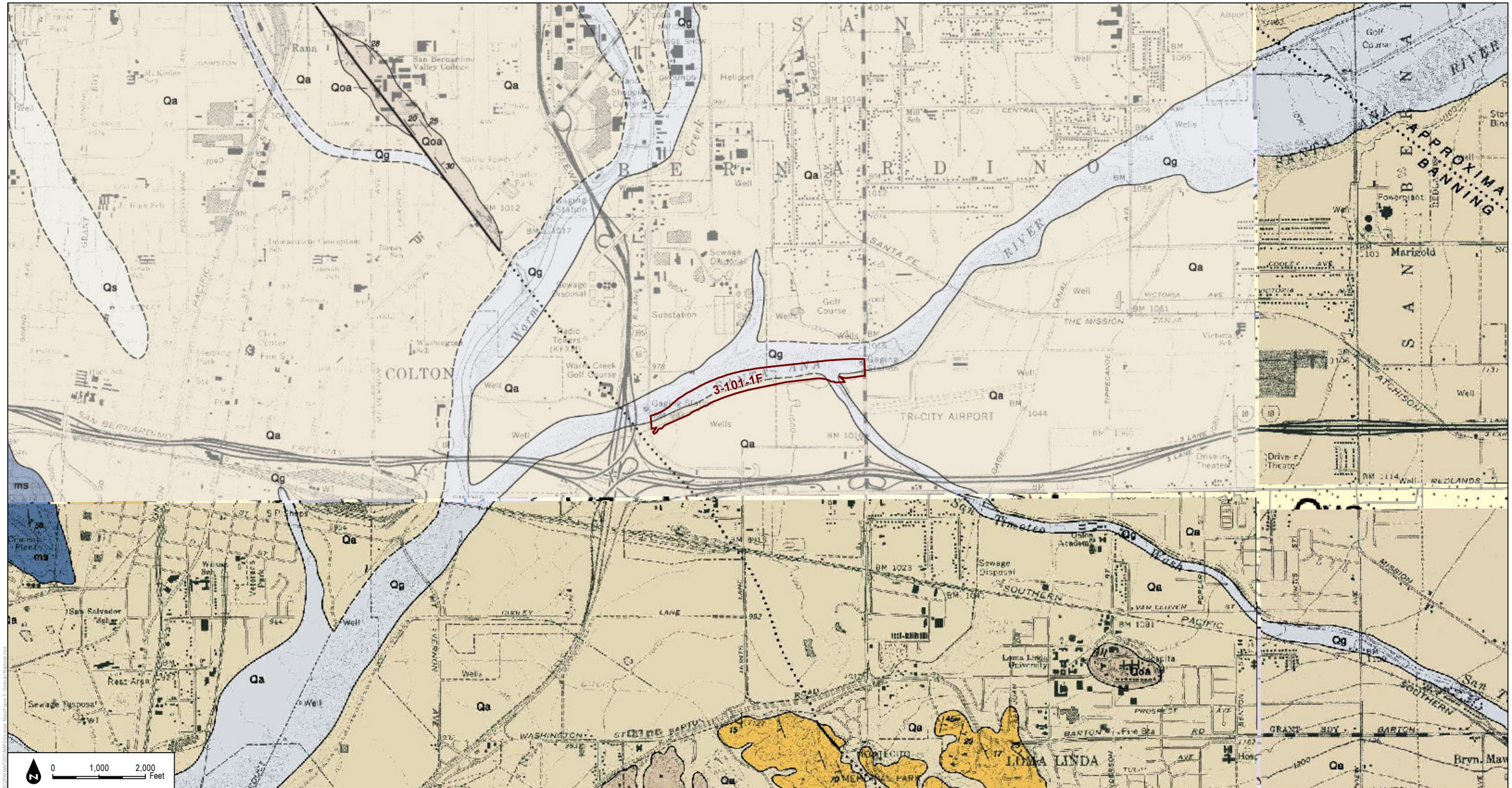
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

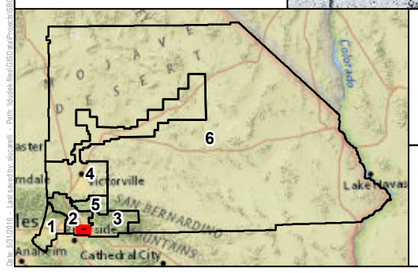
MAP 192

Zone 3 - Santa Ana River

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

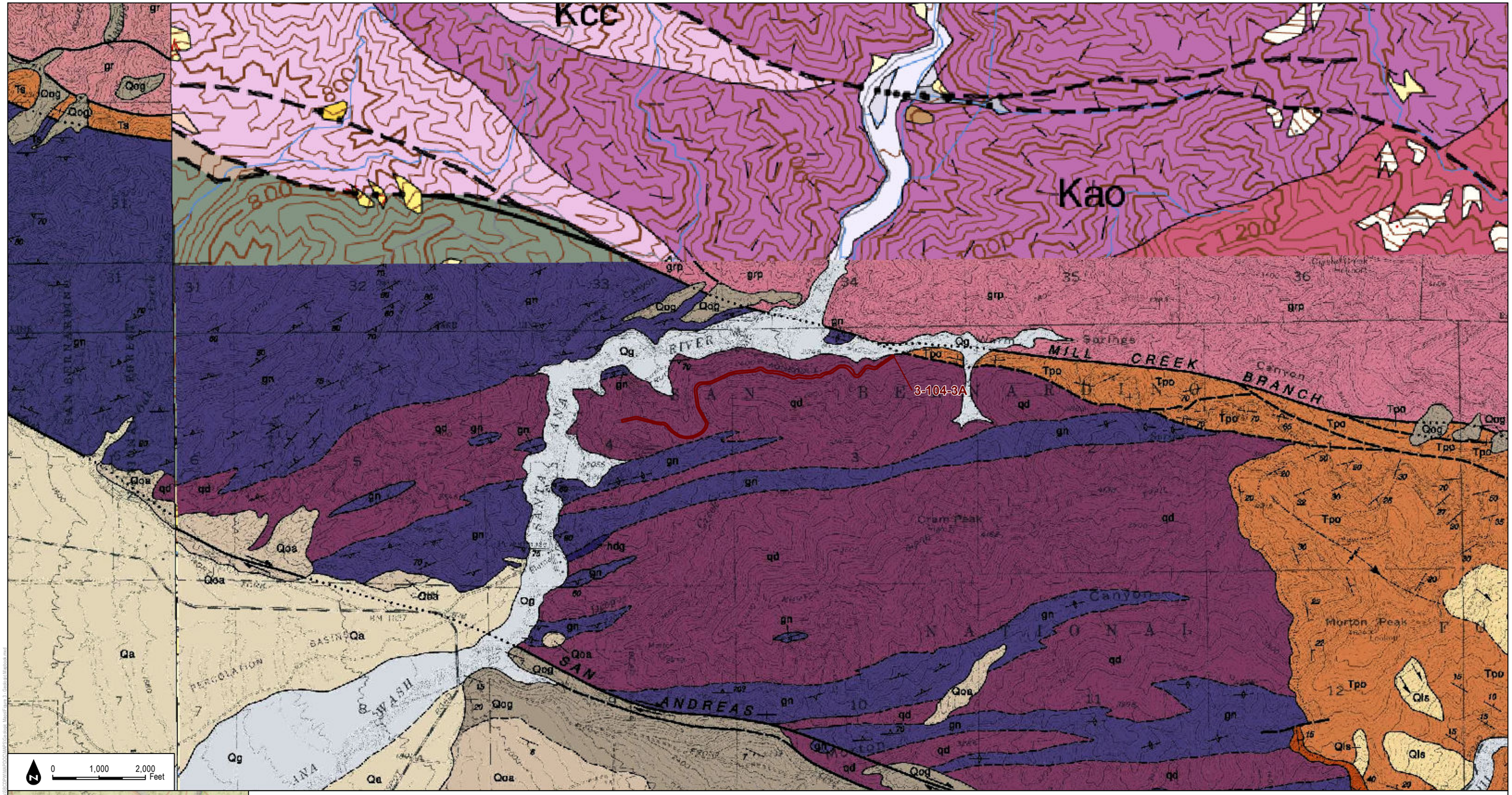
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

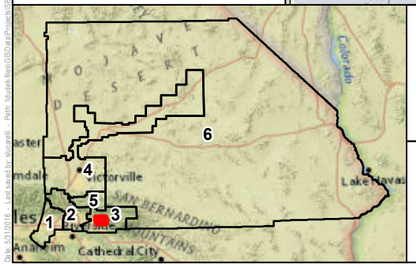
MAP 193

Zone 3 - Santa Ana River (Incl. COE)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

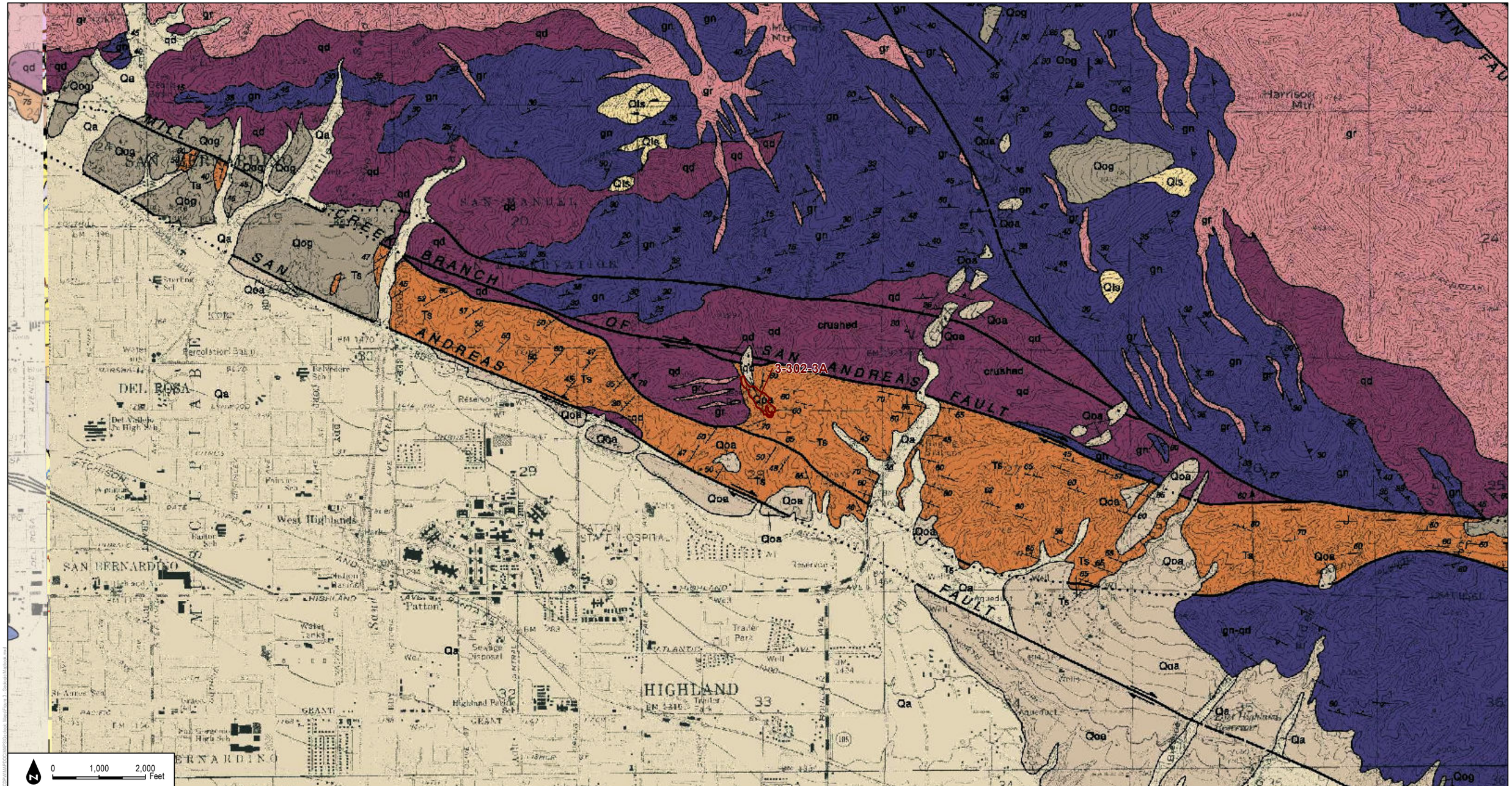
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

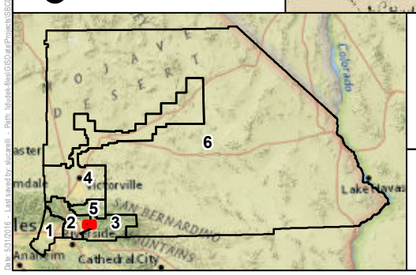
MAP 194

Zone 3 - Seven Oaks Dam, COE (DSOD)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

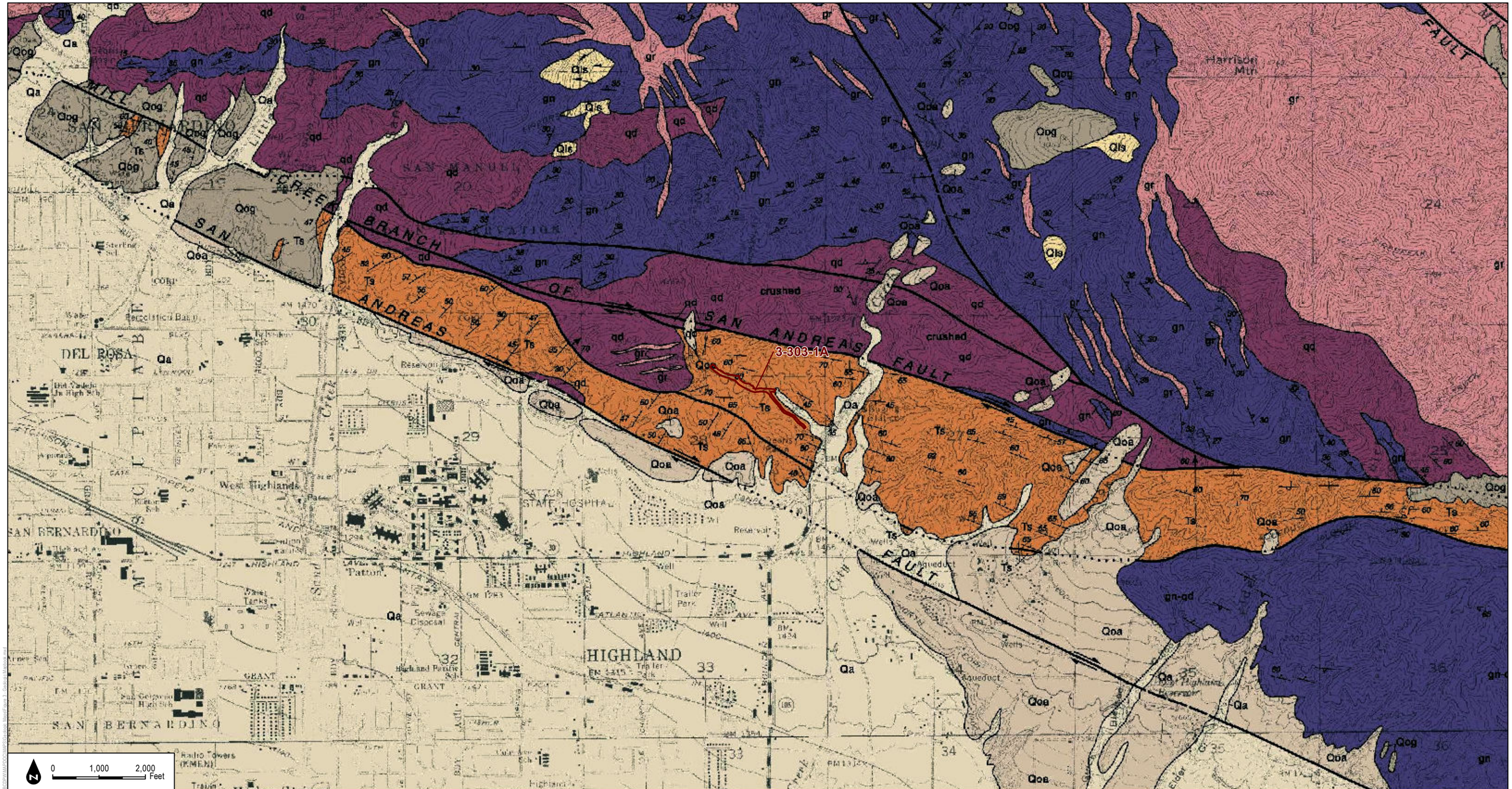
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

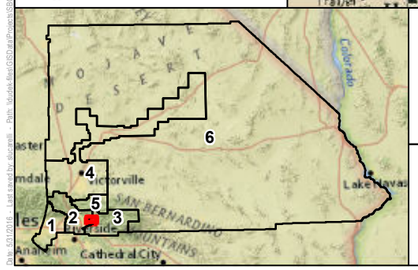
MAP 195

Zone 3 - Small Canyon Dam (DSOD)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

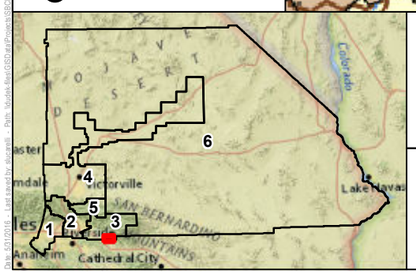
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 196

Zone 3 - Small Canyon Diversion Channel

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

1:24,000

DUDEK

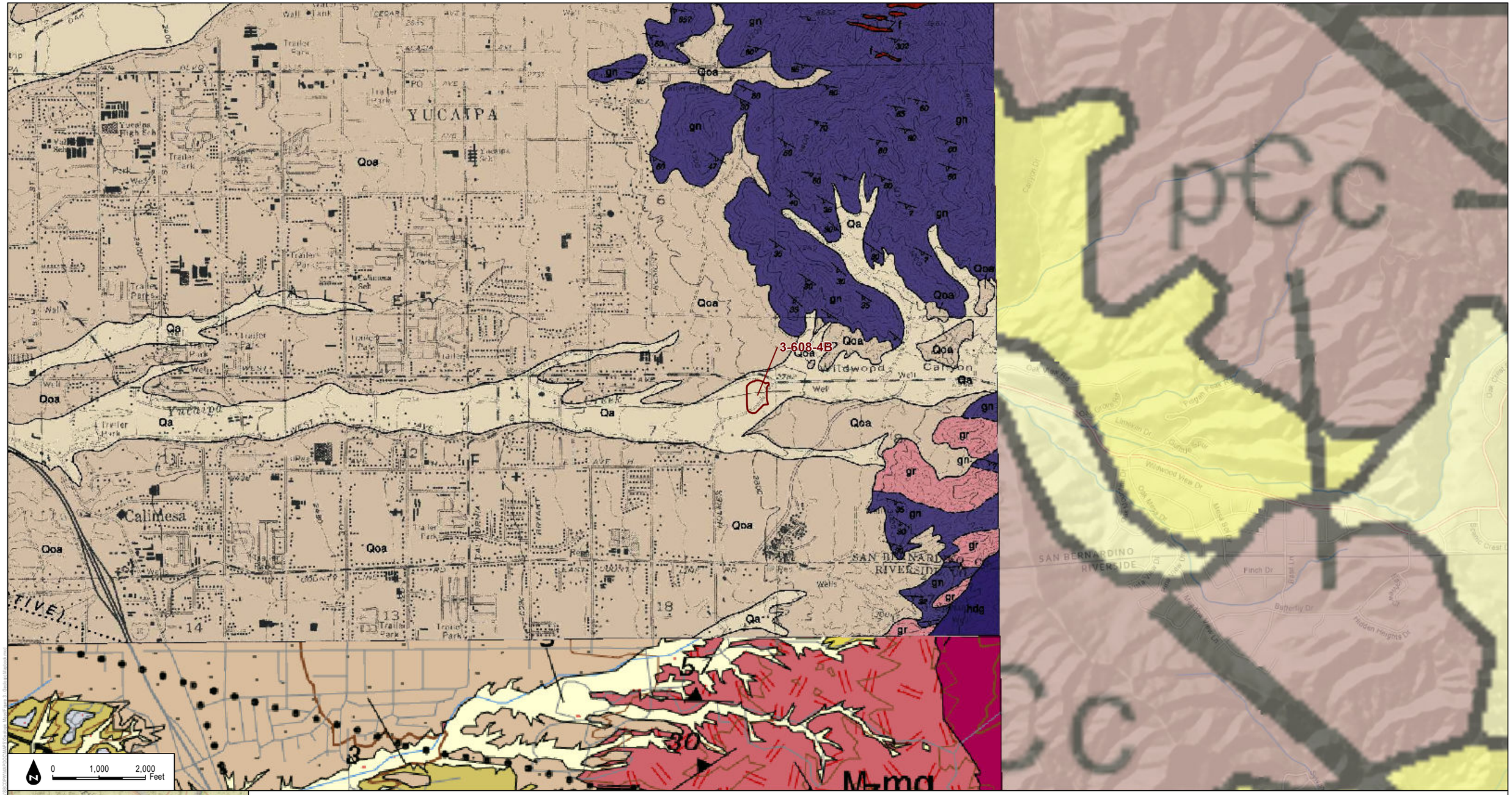
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

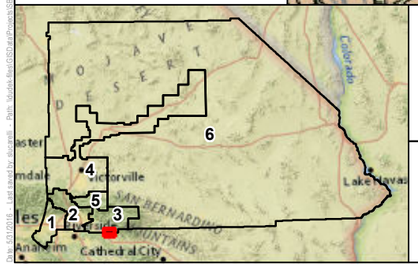
MAP 197

Zone 3 - Water Canyon Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

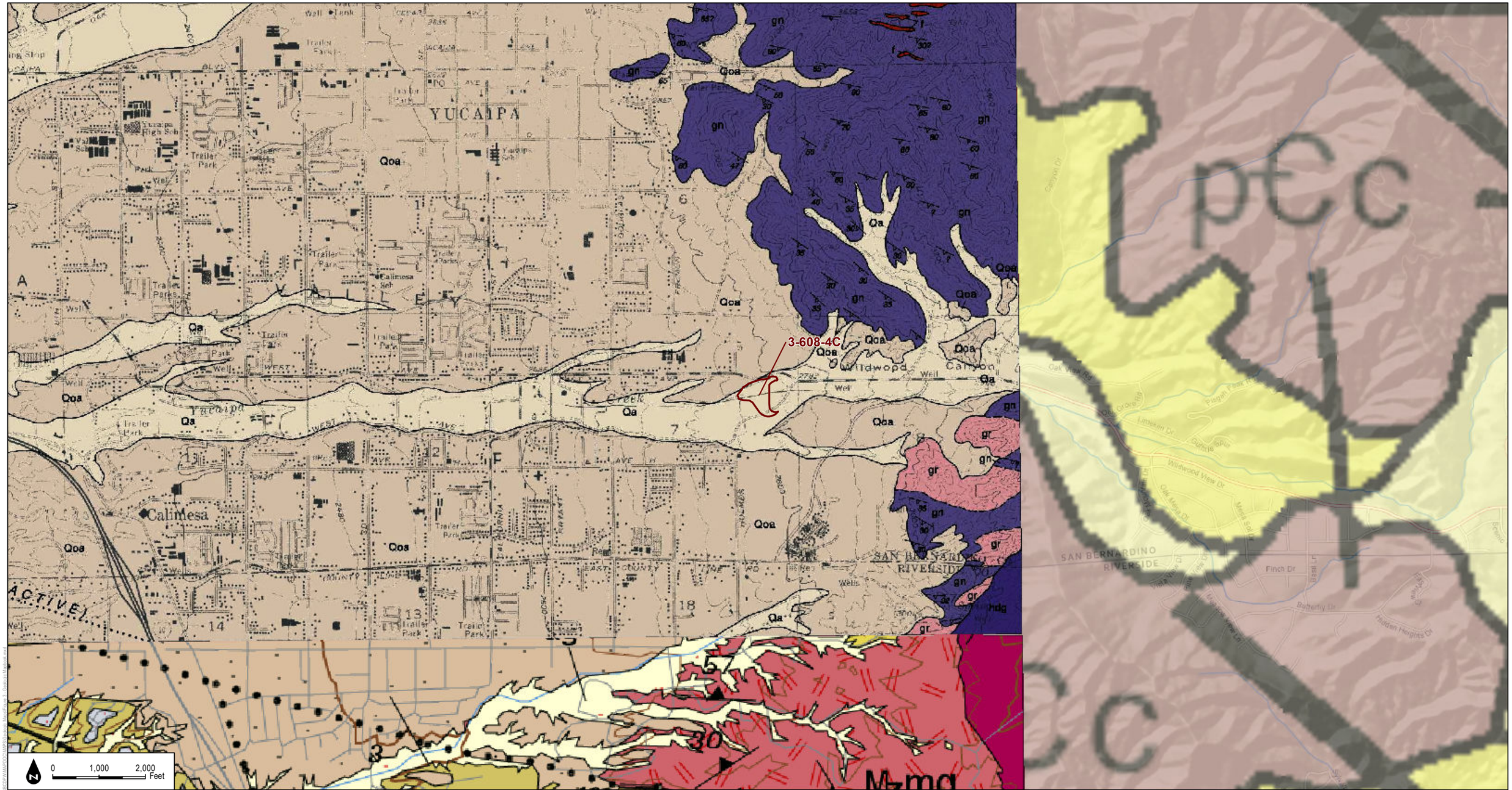
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

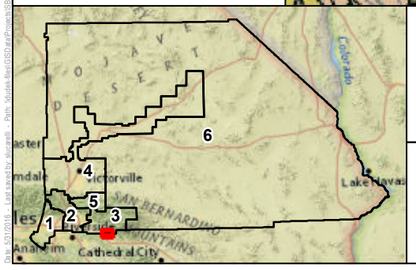
MAP 198

Zone 3 - Wildwood Basin #1

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

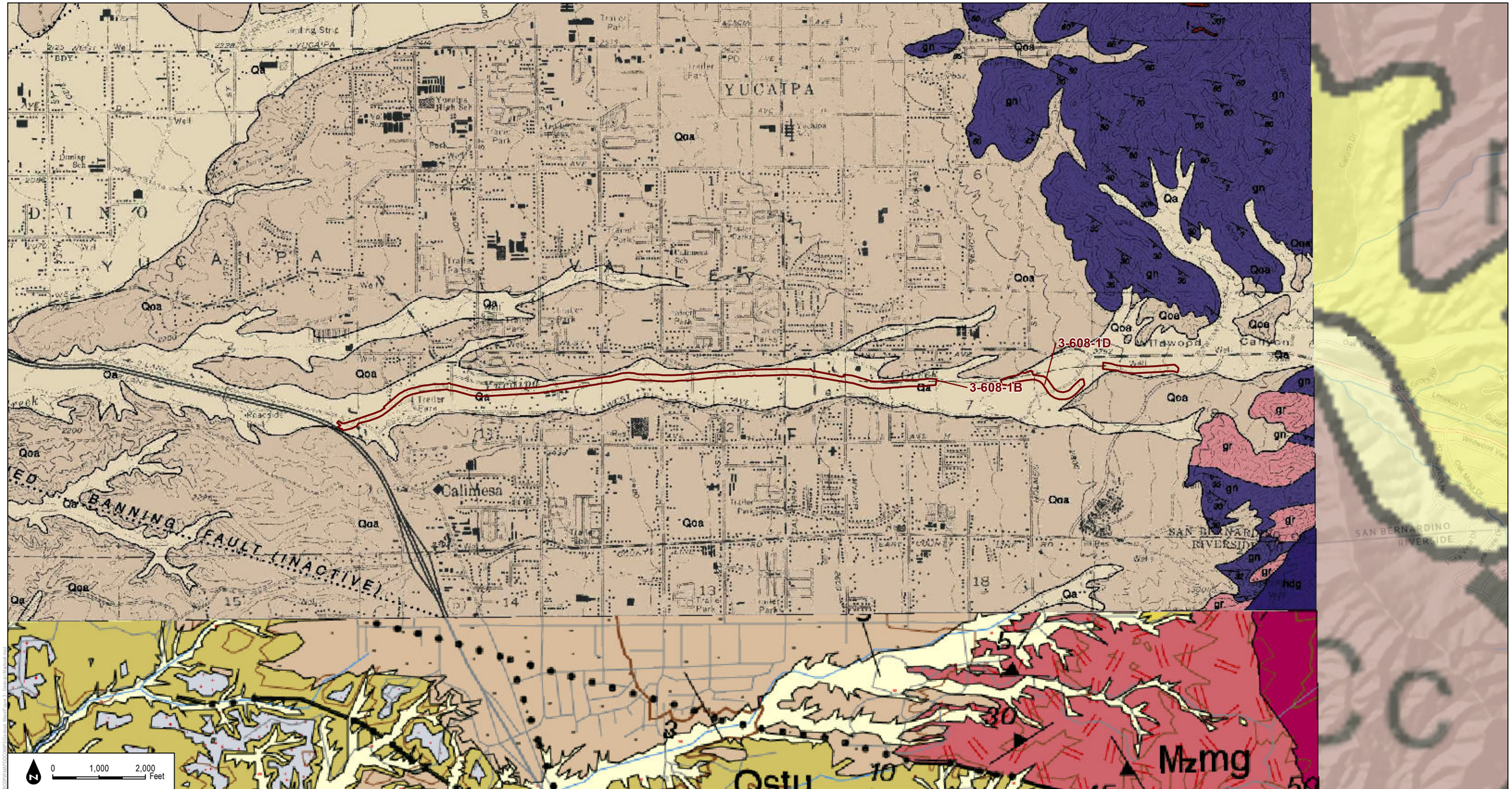
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

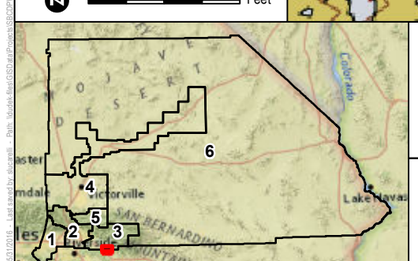
MAP 199

Zone 3 - Wildwood Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

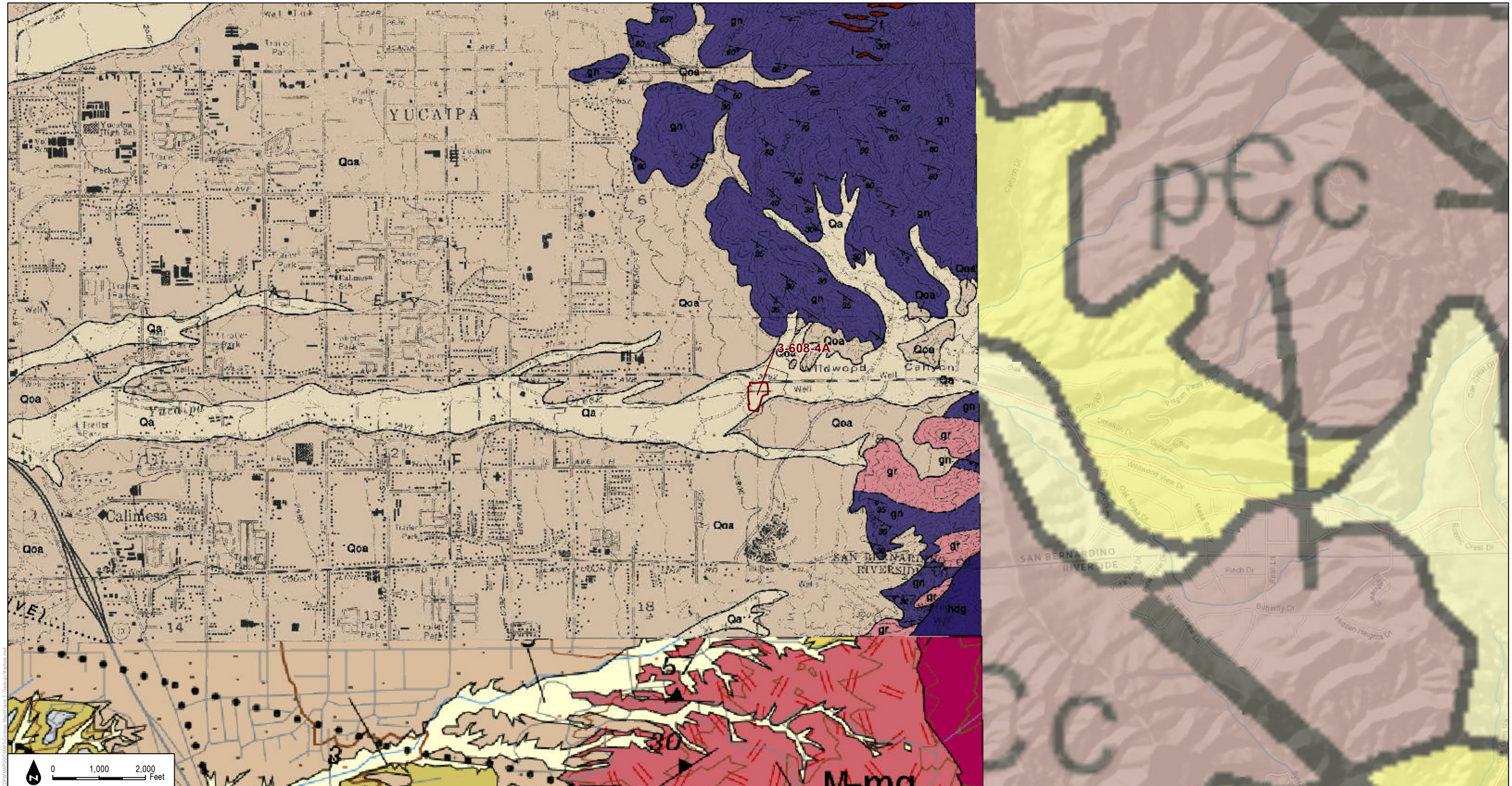
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

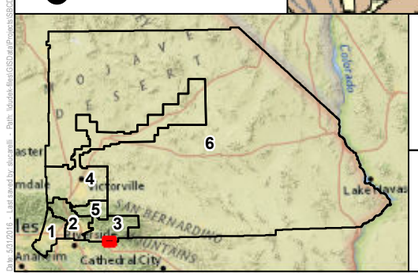
MAP 200

Zone 3 - Wildwood Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

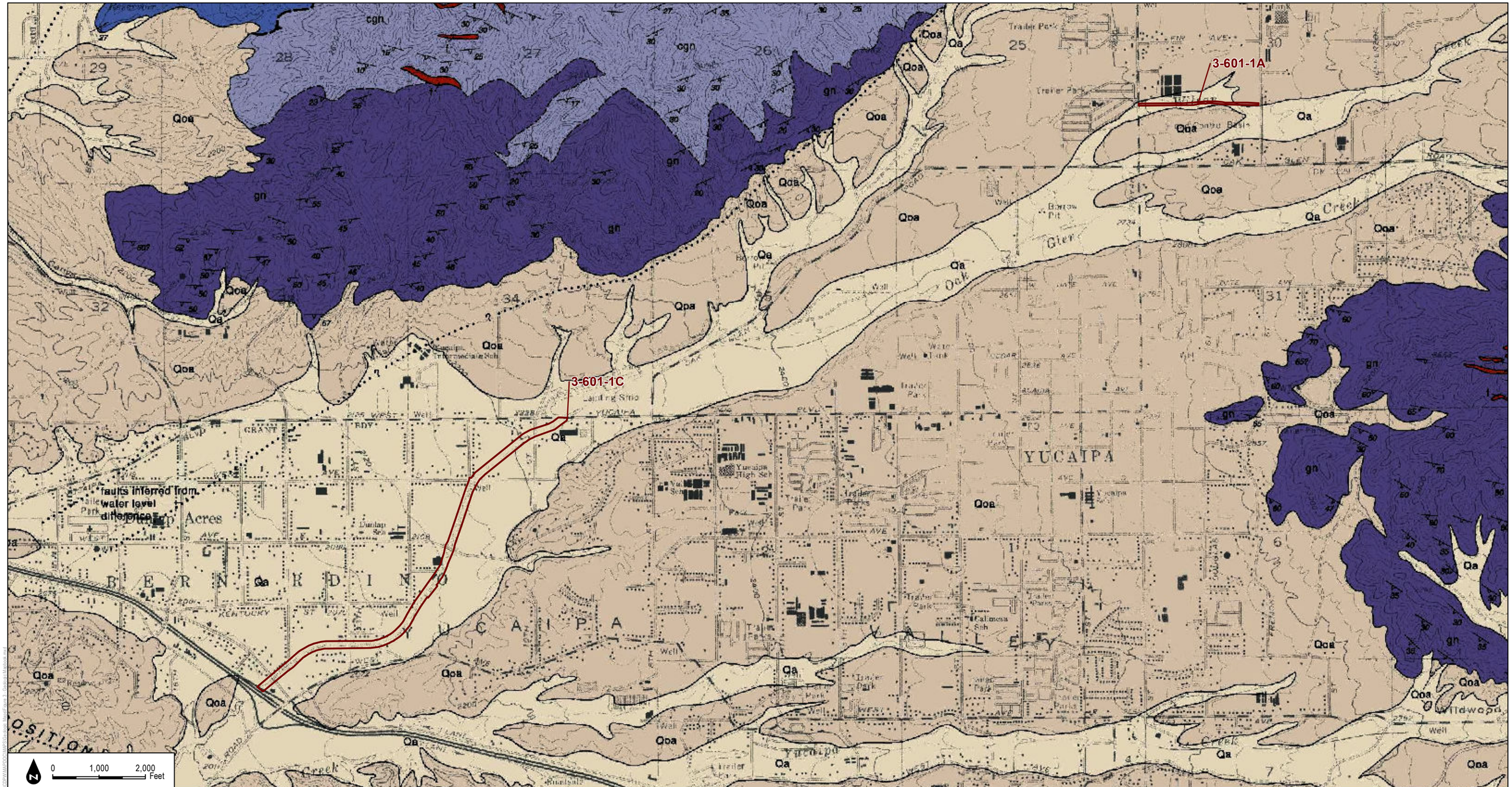
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

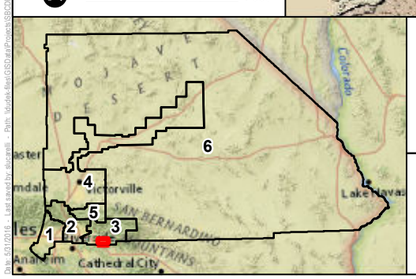
MAP 201

Zone 3 - Wildwood Debris Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

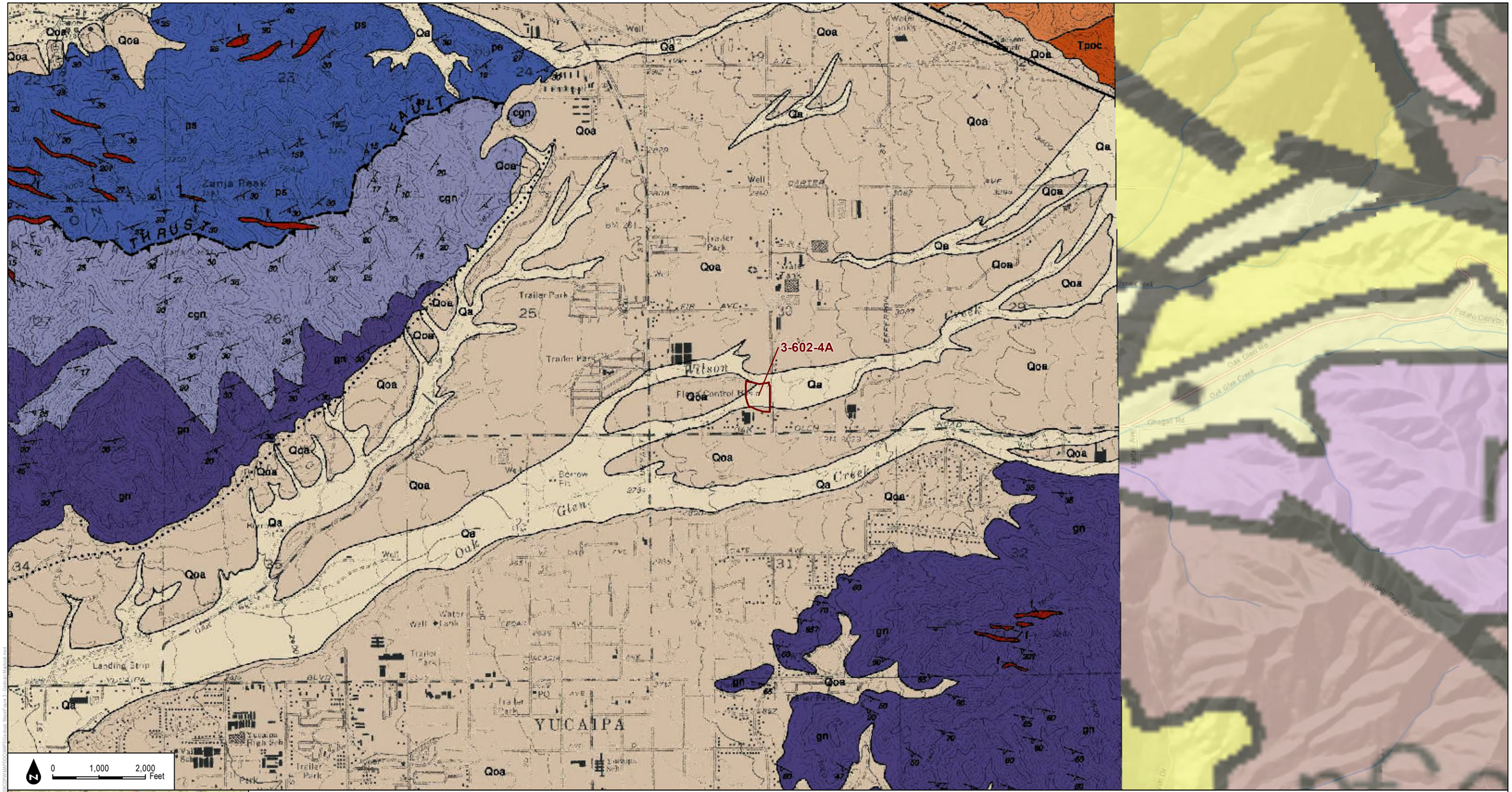
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

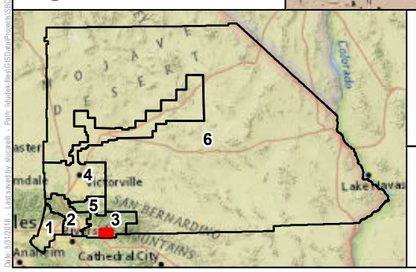
MAP 202

Zone 3 - Wilson Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

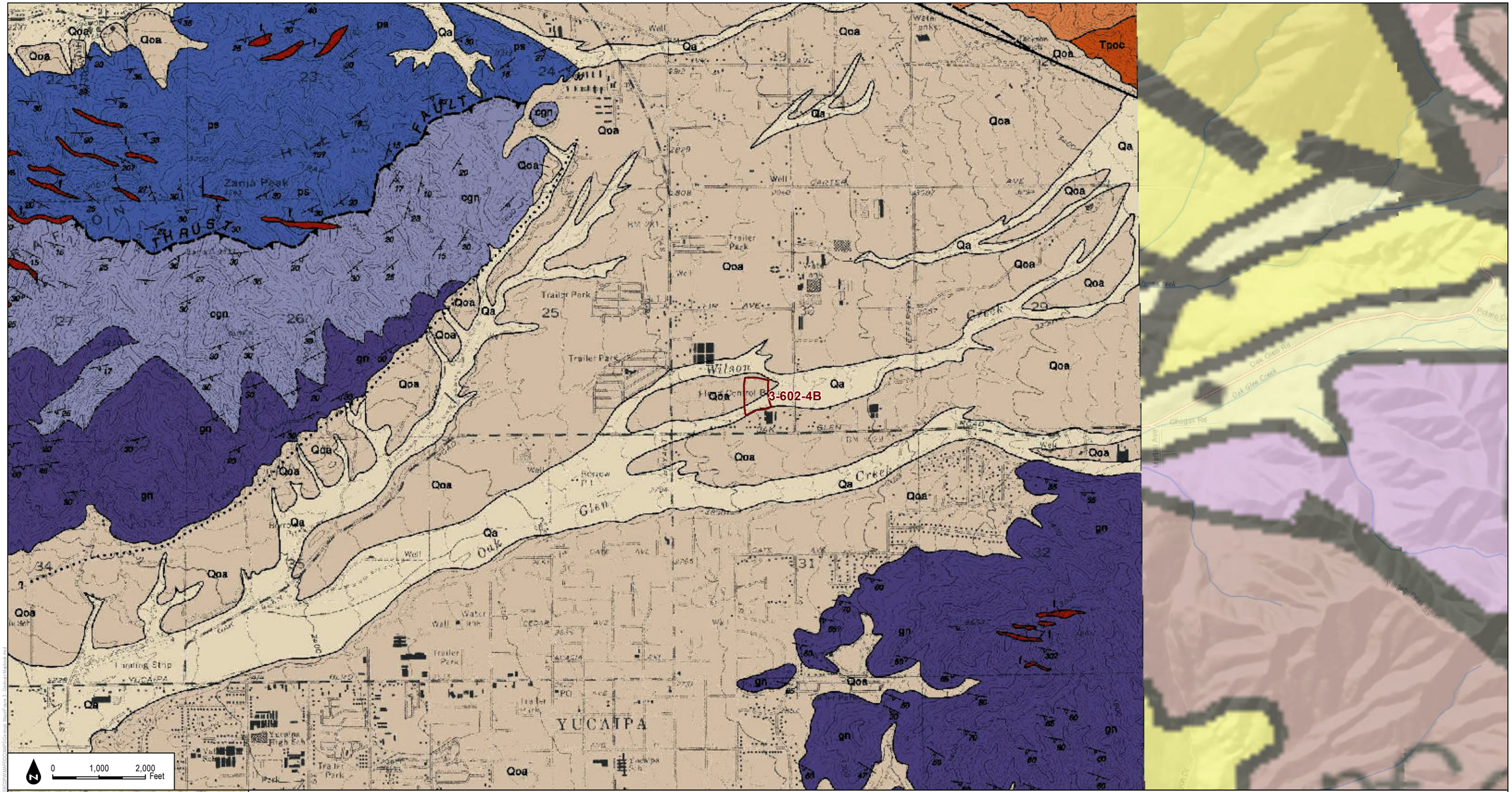
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

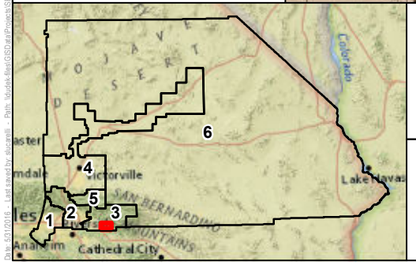
MAP 203

Zone 3 - Wilson Creek Basin #1

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

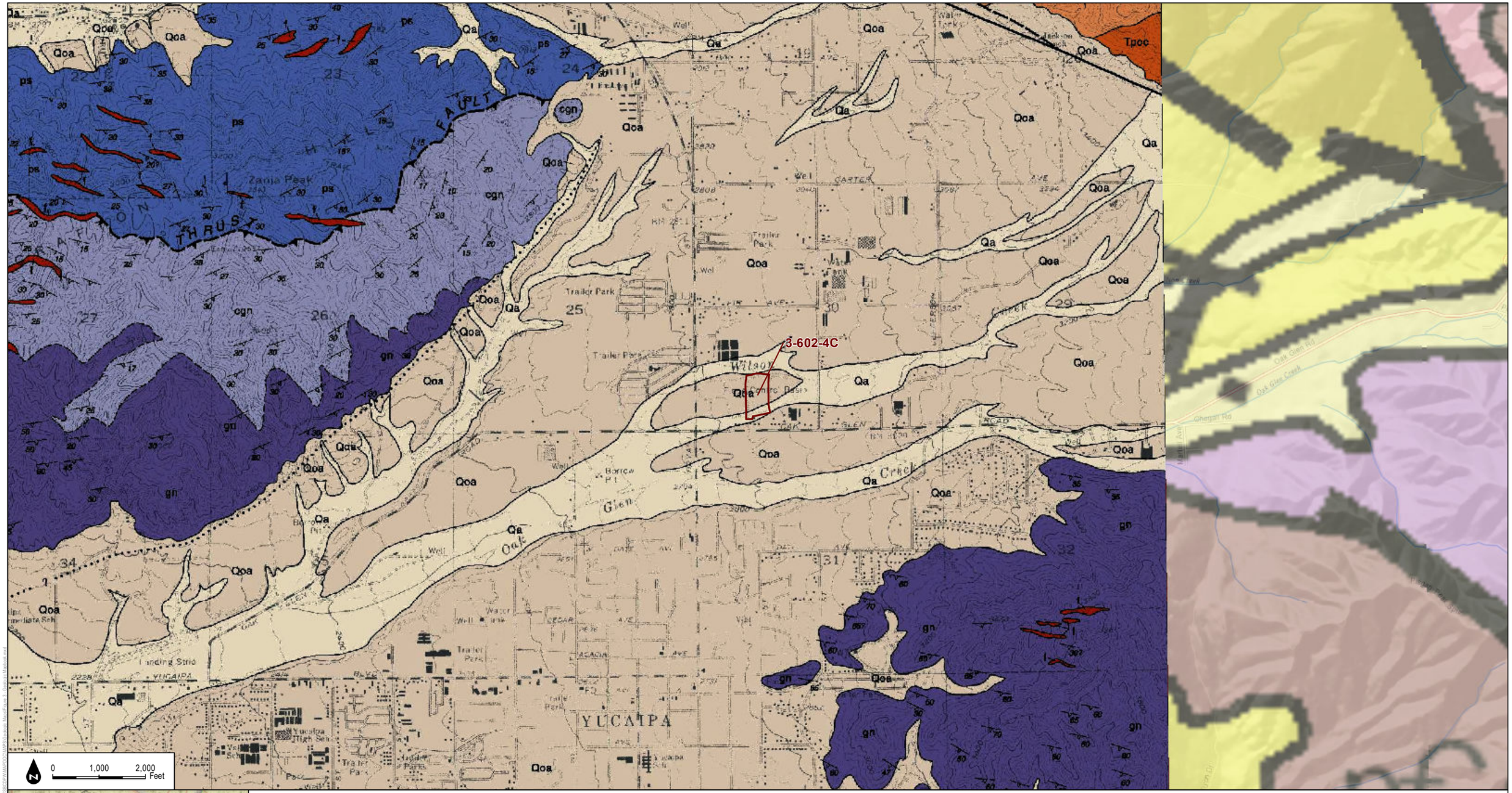
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

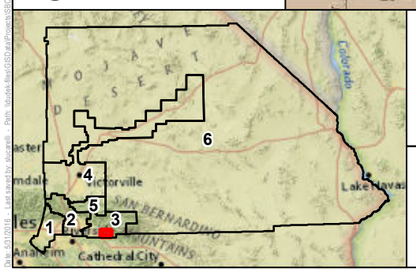
MAP 204

Zone 3 - Wilson Creek Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

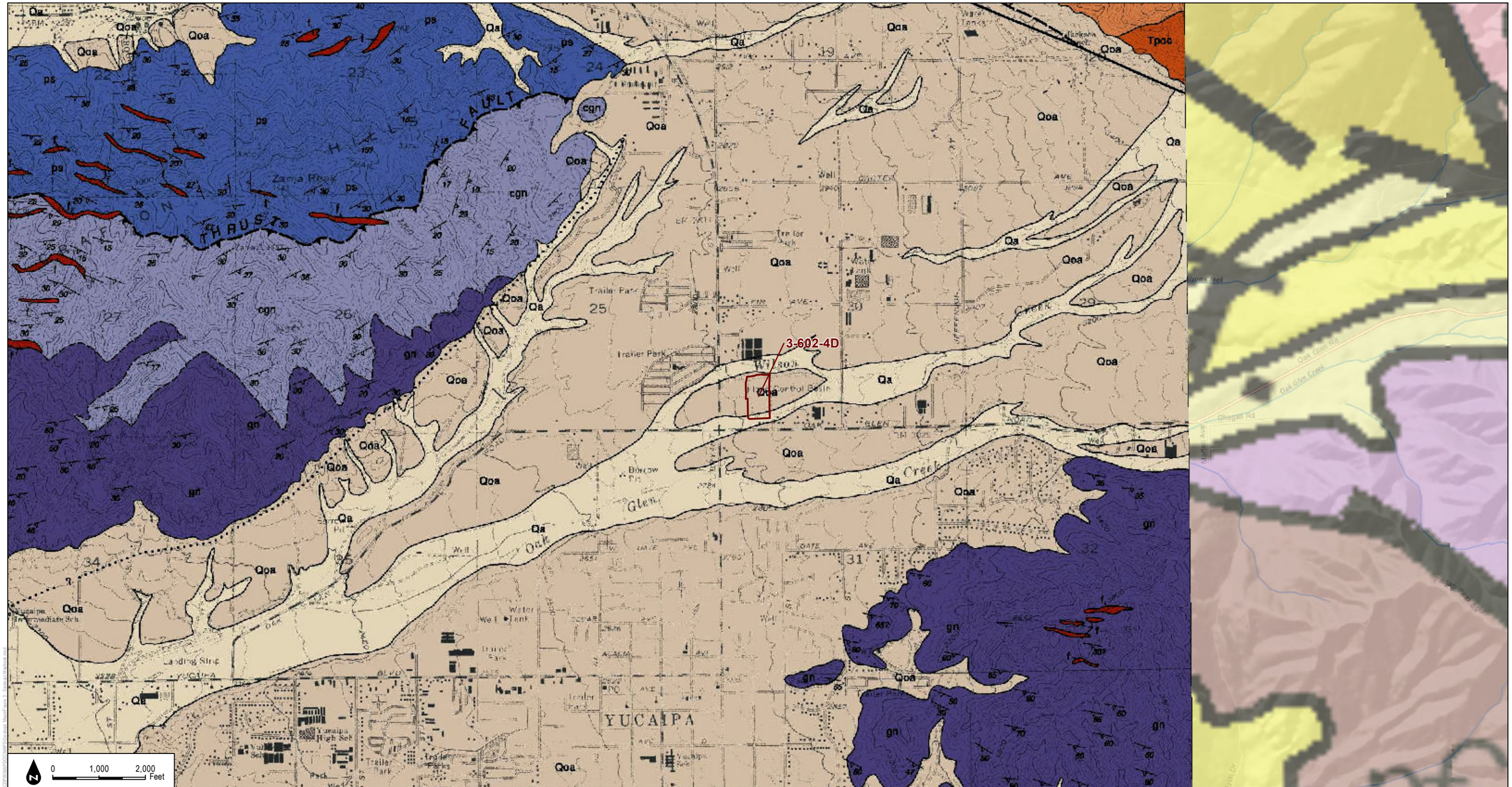
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

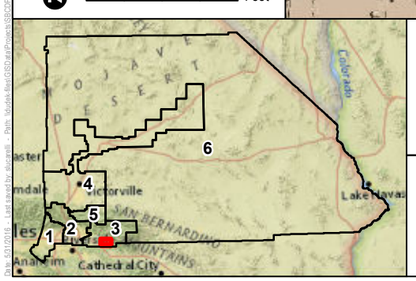
MAP 205

Zone 3 - Wilson Creek Basin #3

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

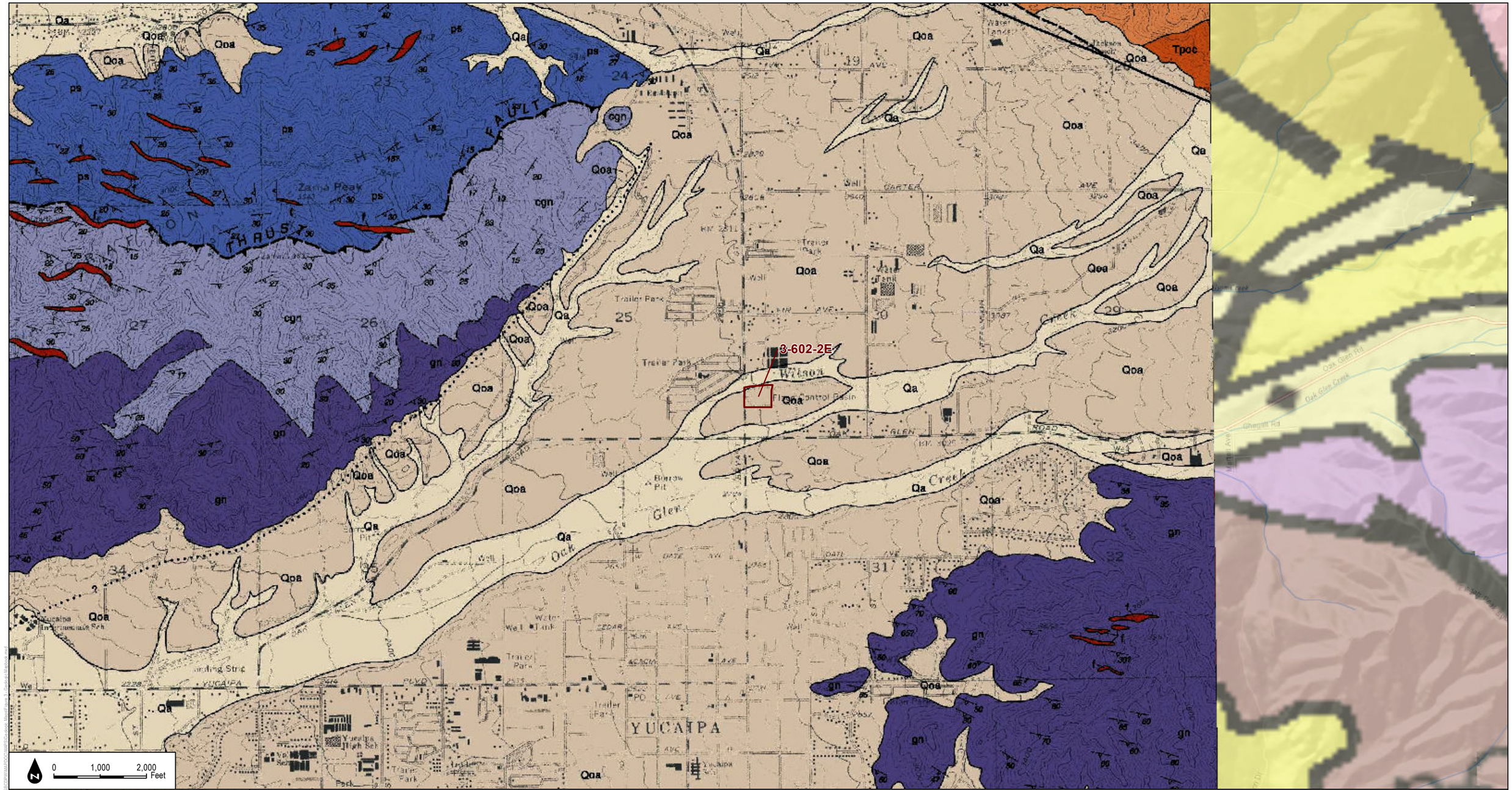
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

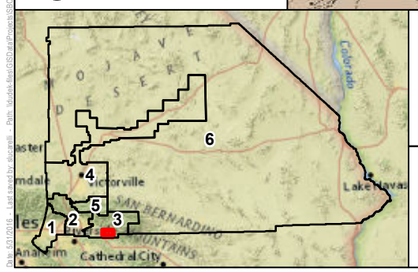
MAP 206

Zone 3 - Wilson Creek Basin #4

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

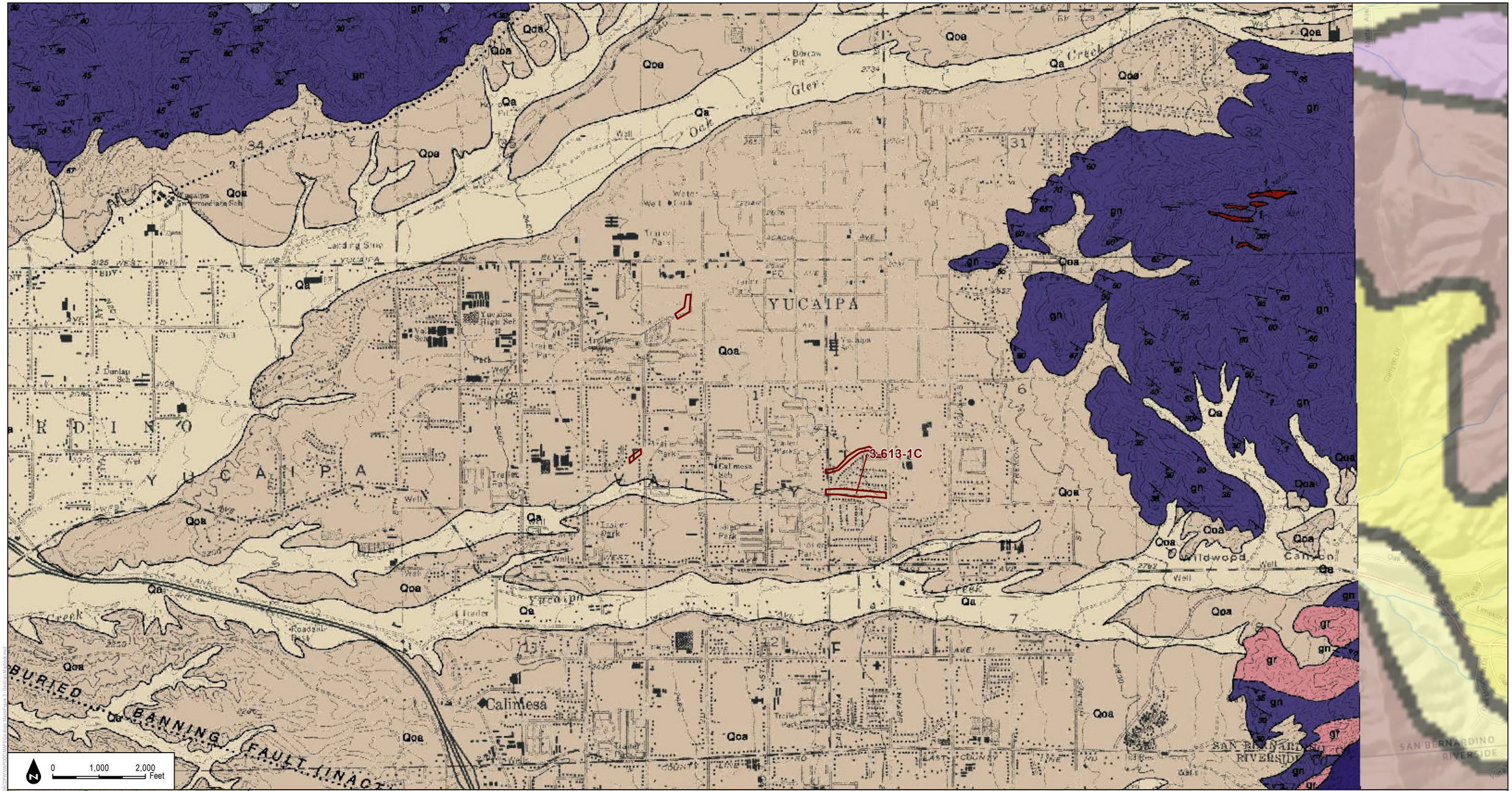
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

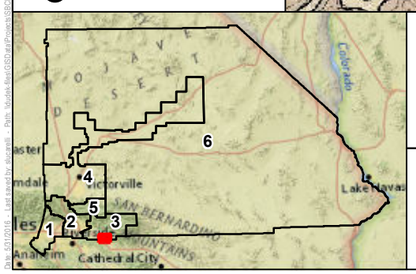
MAP 207

Zone 3 - Wilson Creek Sprdg Grnds (Wilson Basins)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

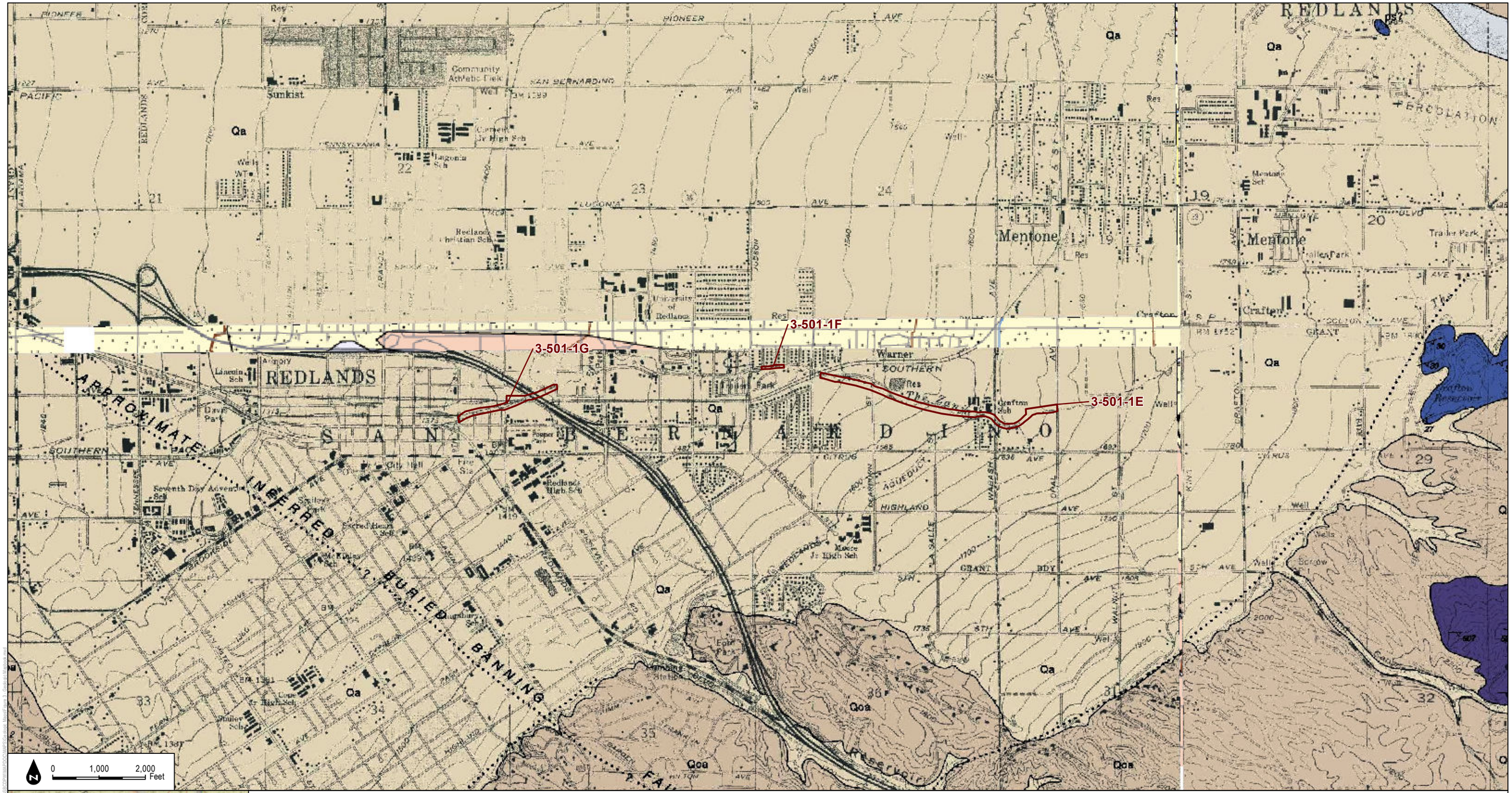
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

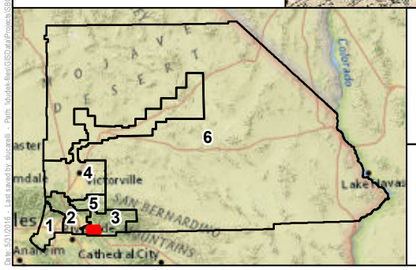
MAP 208

Zone 3 - Yucaipa Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

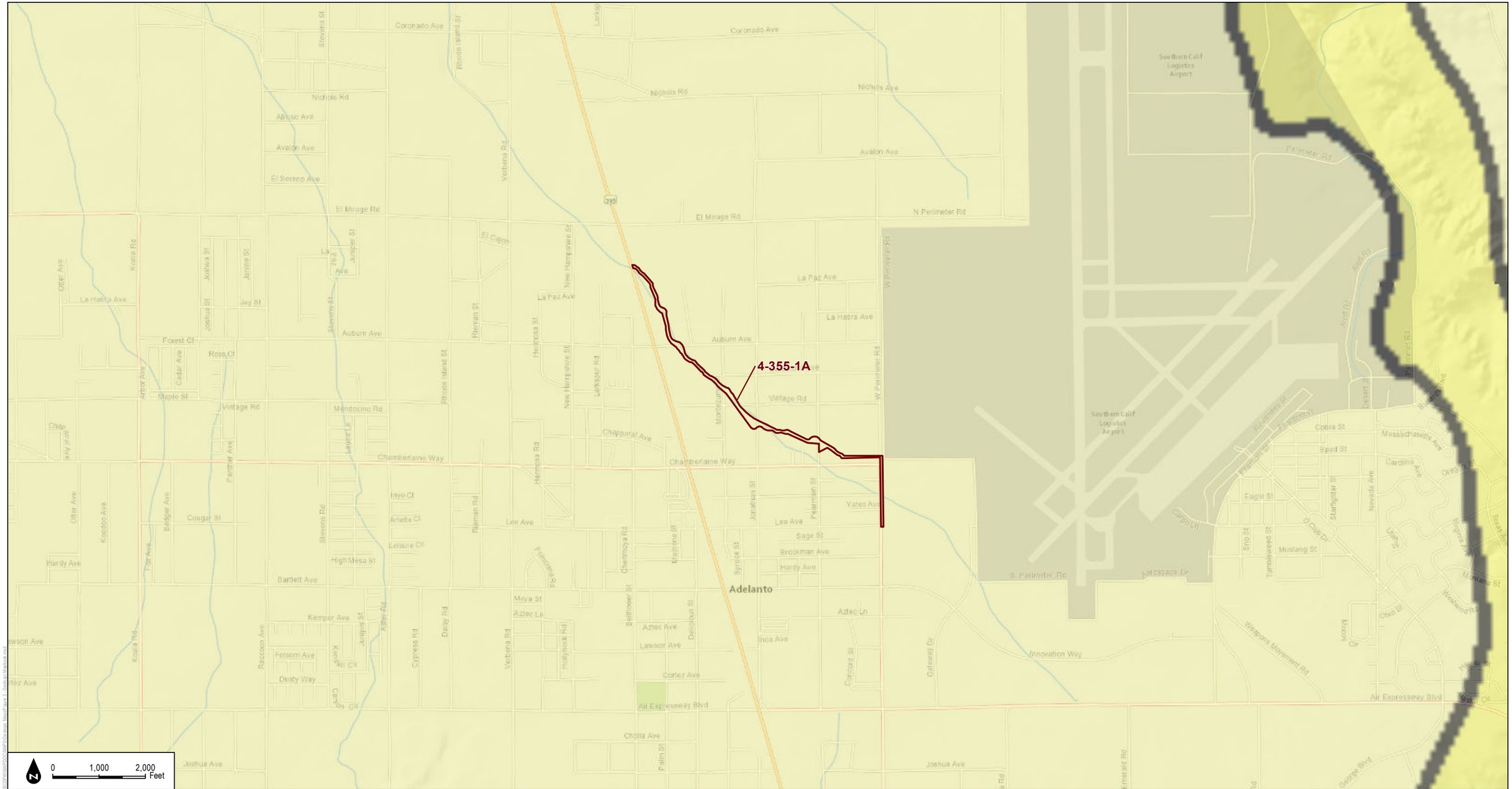
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

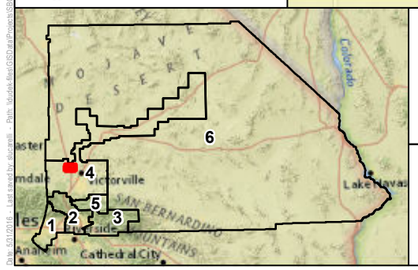
MAP 209

Zone 3 - Zanja Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

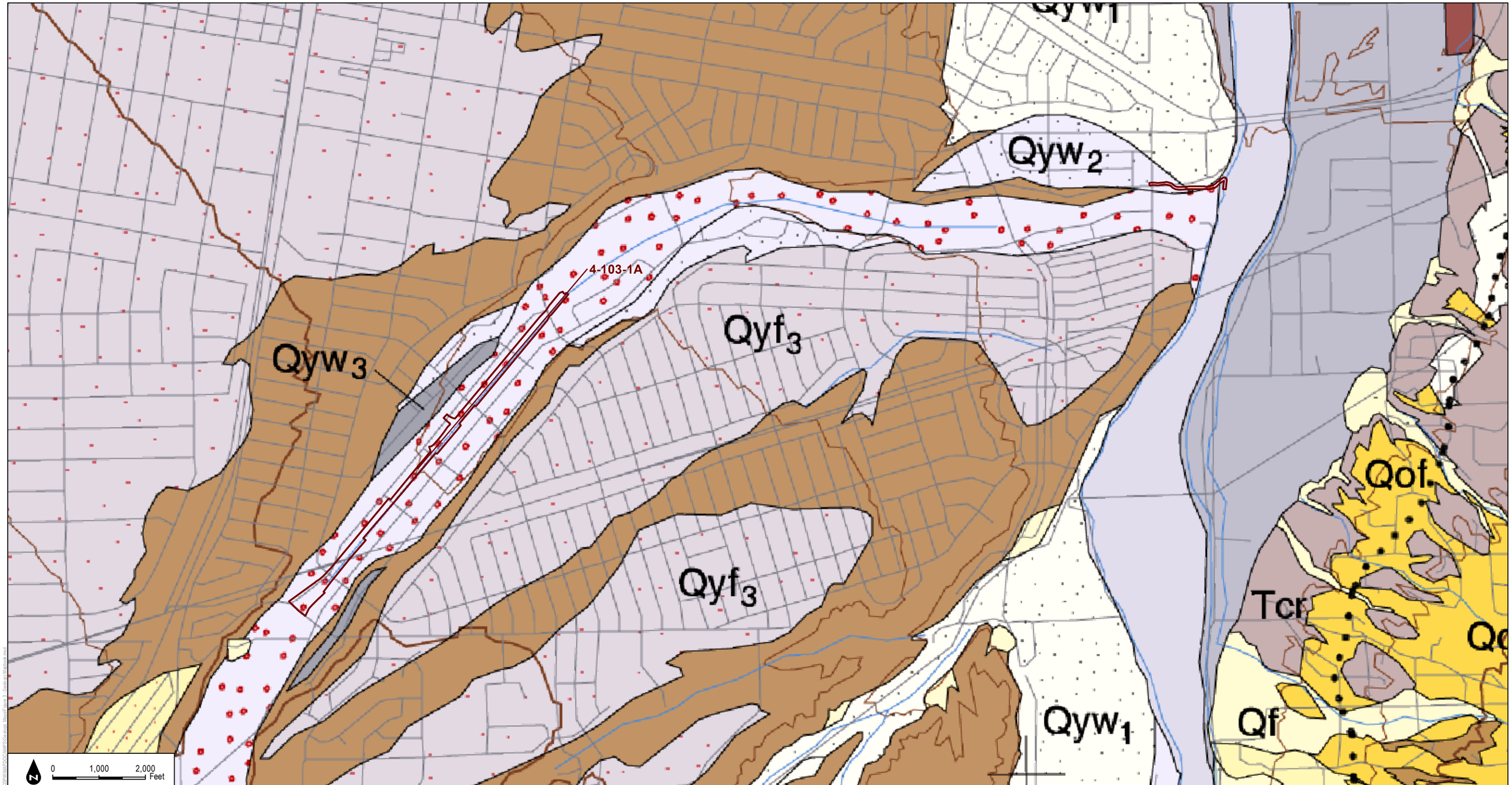
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

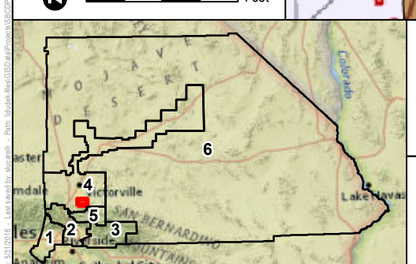
MAP 210

Zone 4 - Adelanto East Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

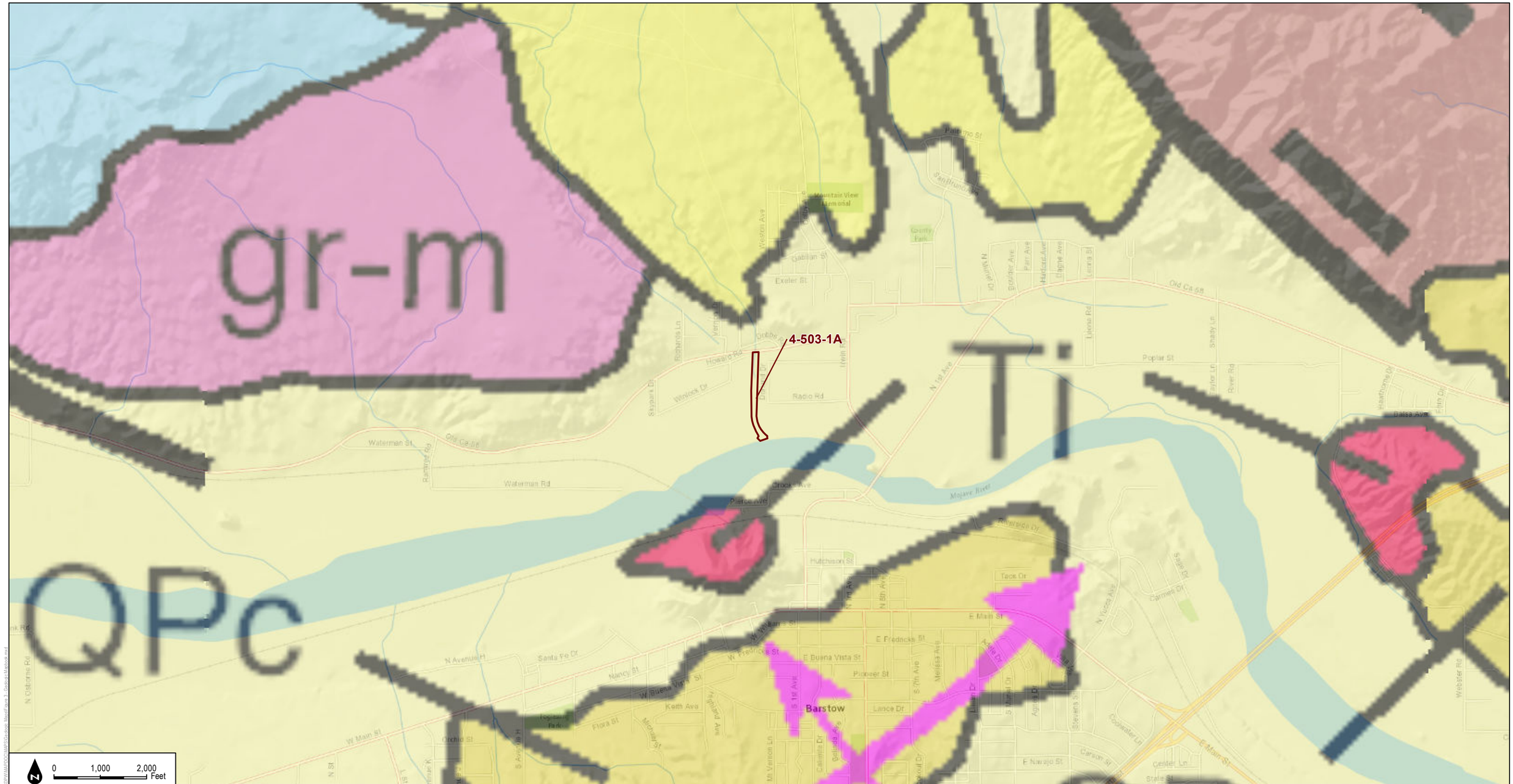
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

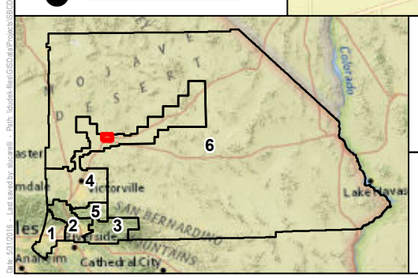
MAP 211

Zone 4 - Antelope Creek Wash

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

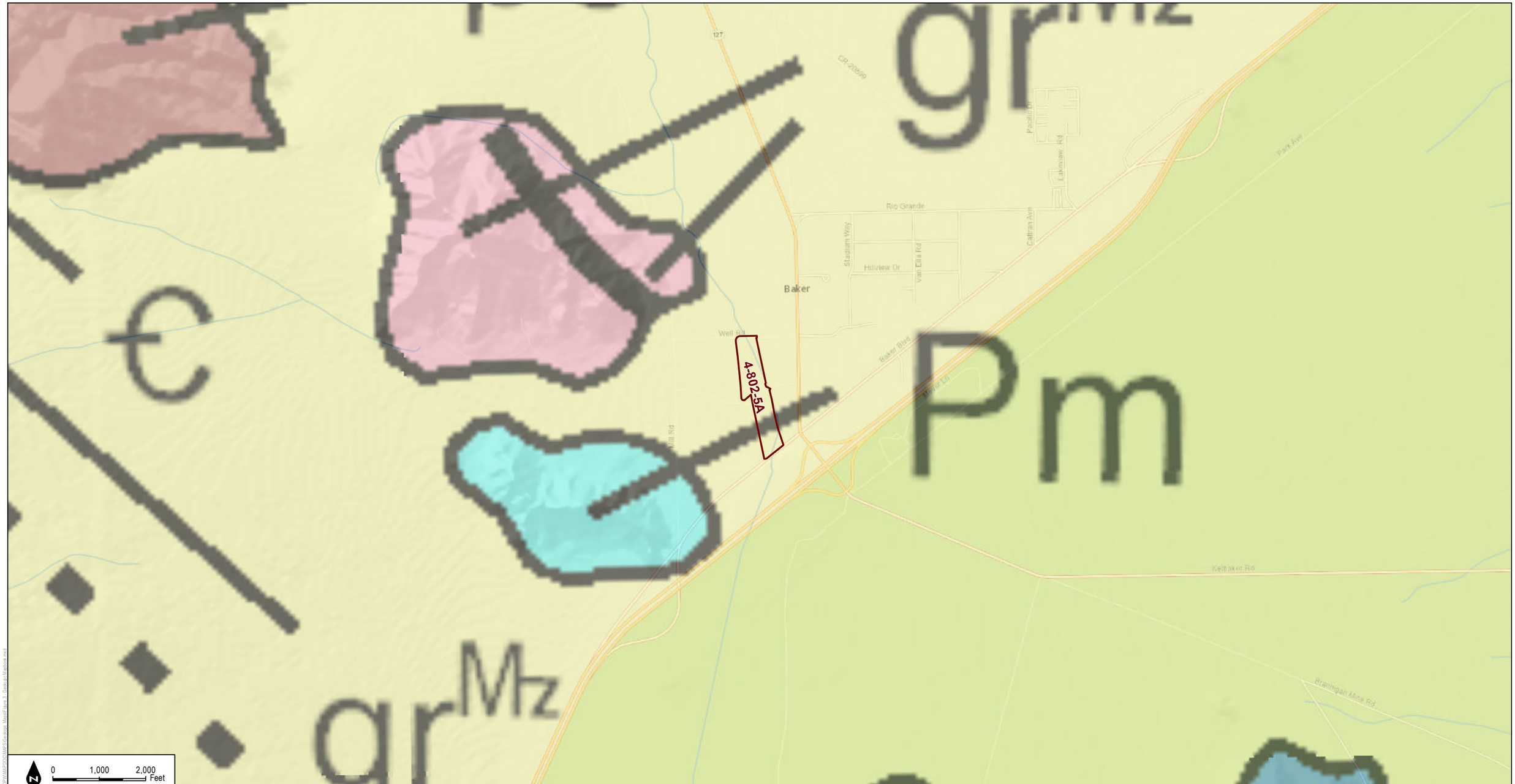
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

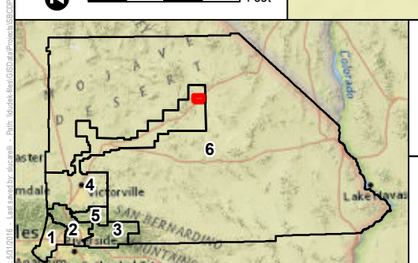
MAP 212

Zone 4 - Arrowhead Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

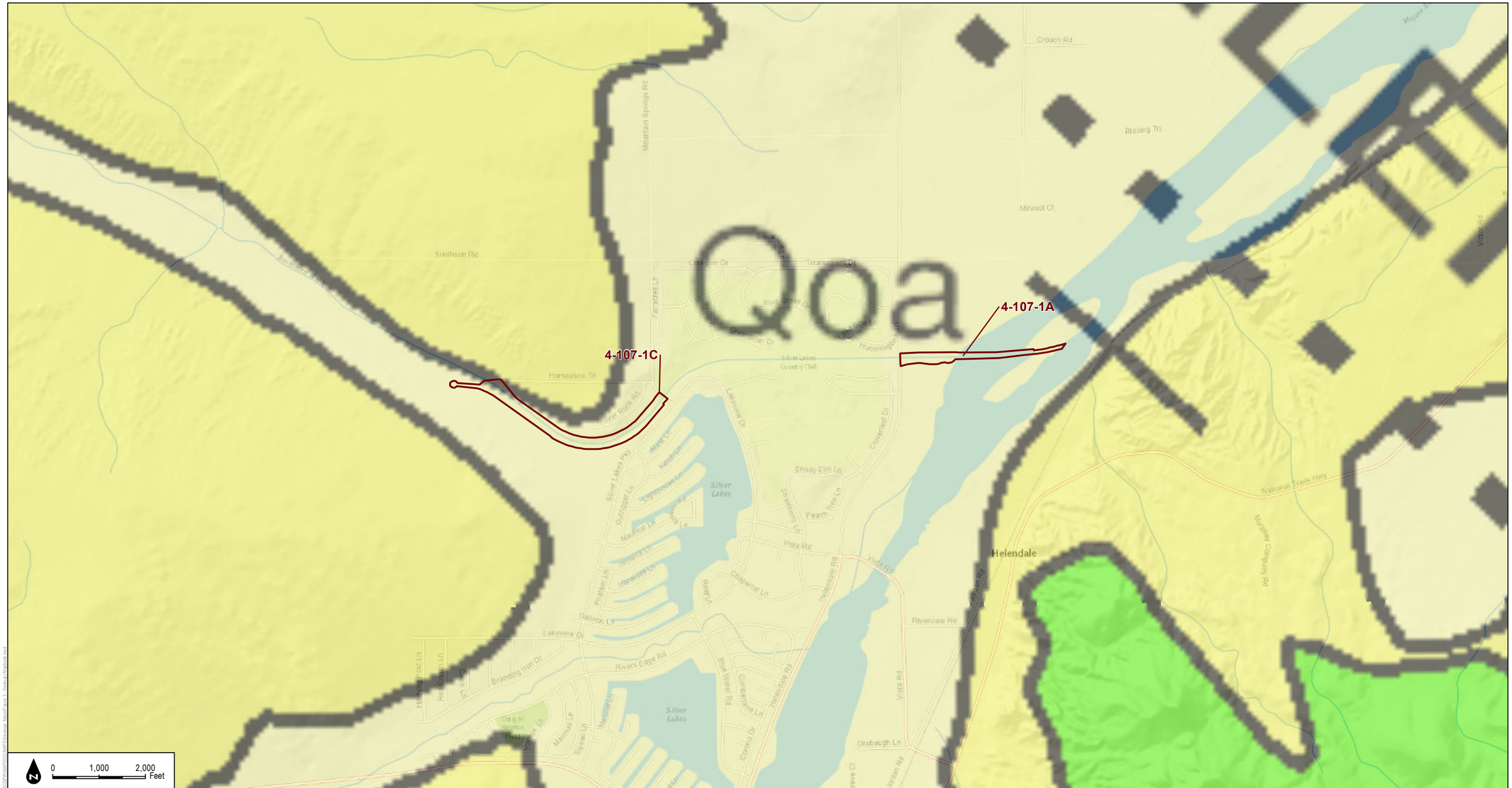
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

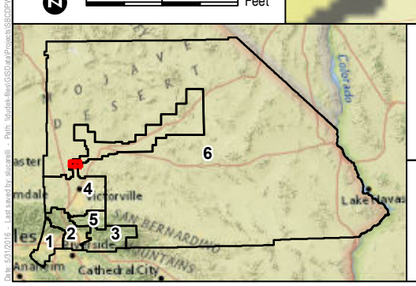
MAP 213

Zone 4 - Baker Levee

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

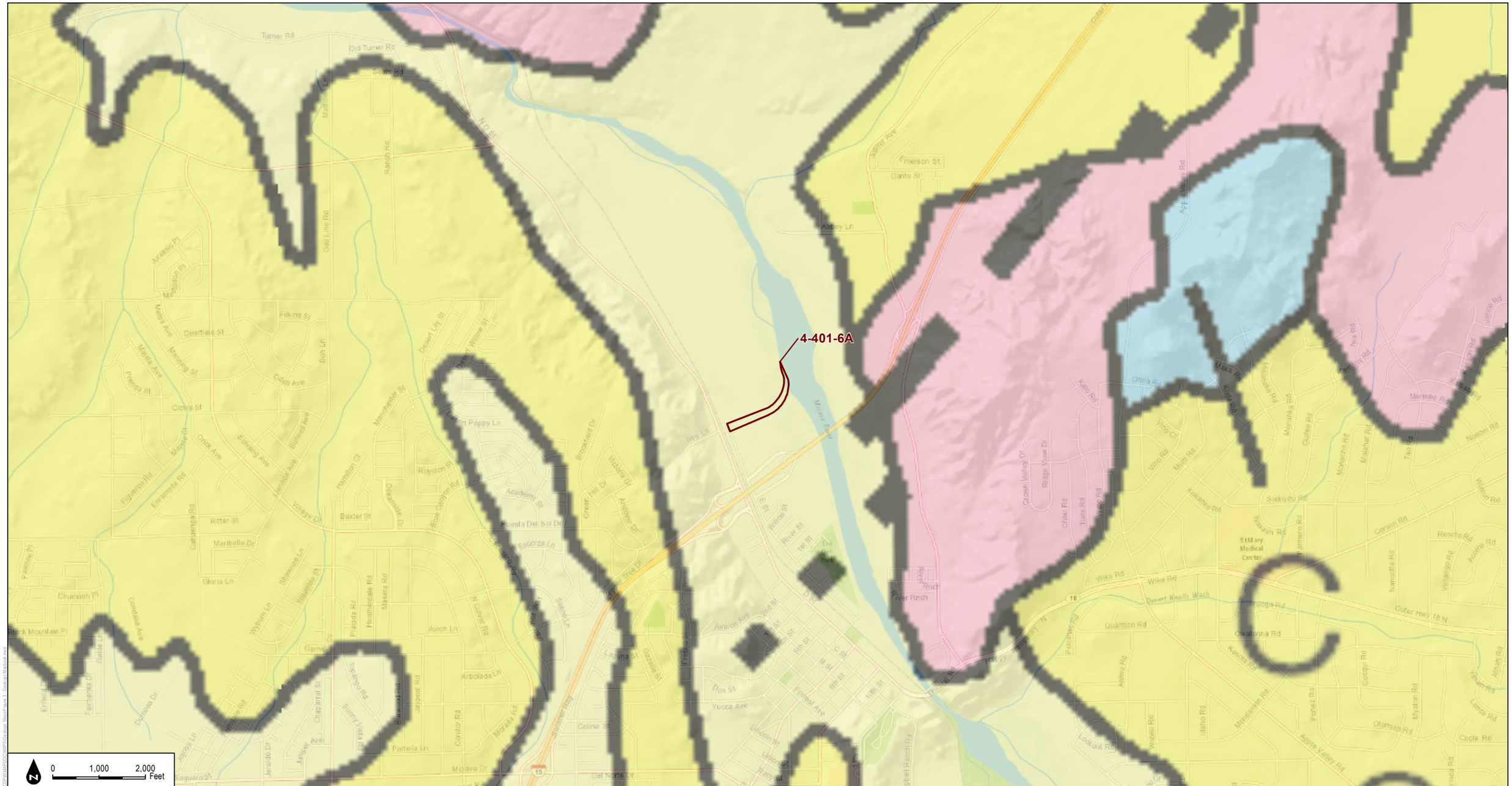
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

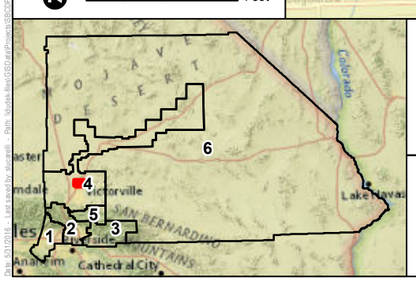
MAP 214

Zone 4 - Buckthorn Wash

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

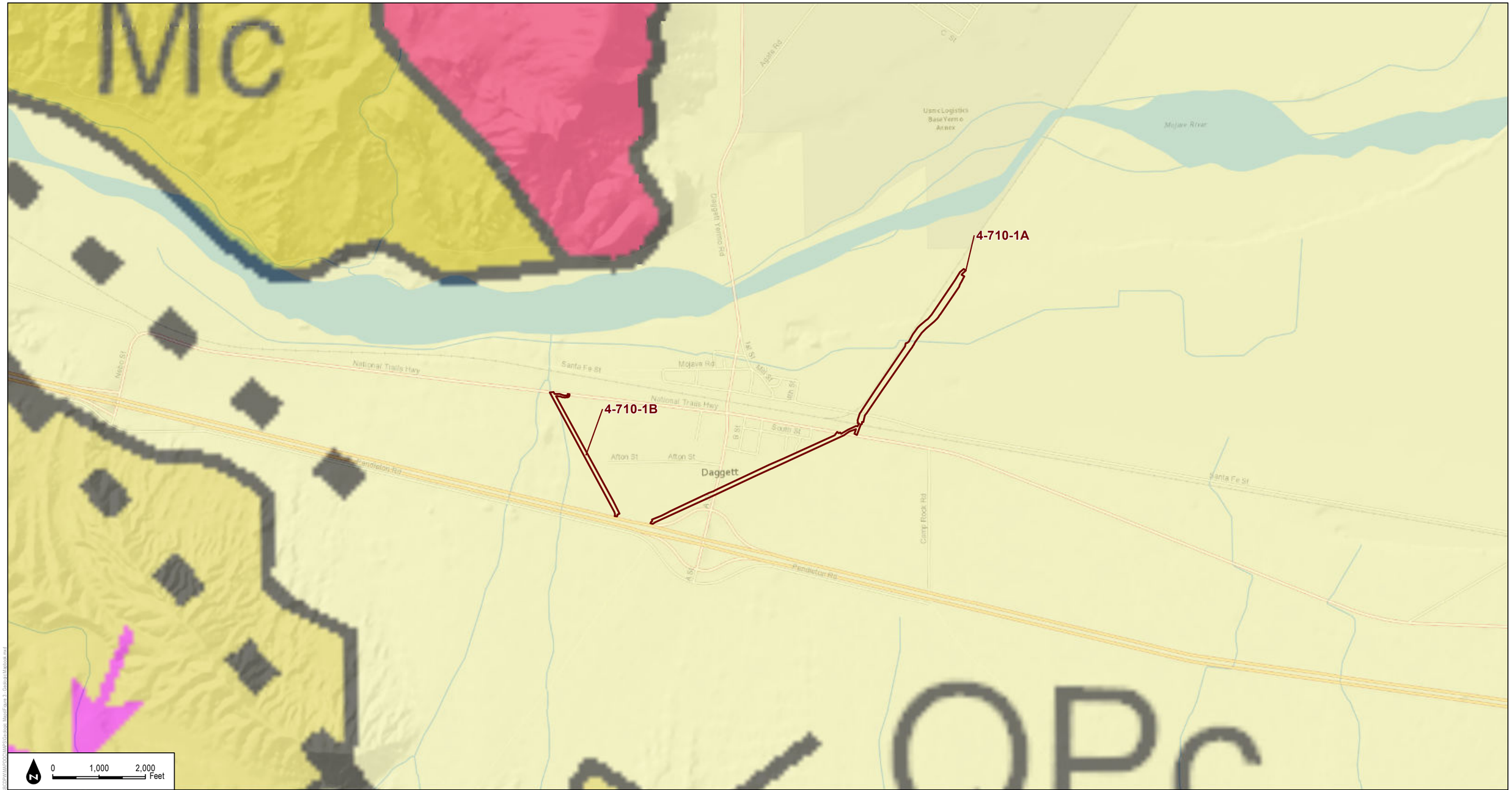
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

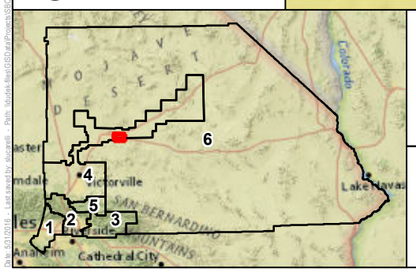
MAP 215

Zone 4 - D Street SD

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

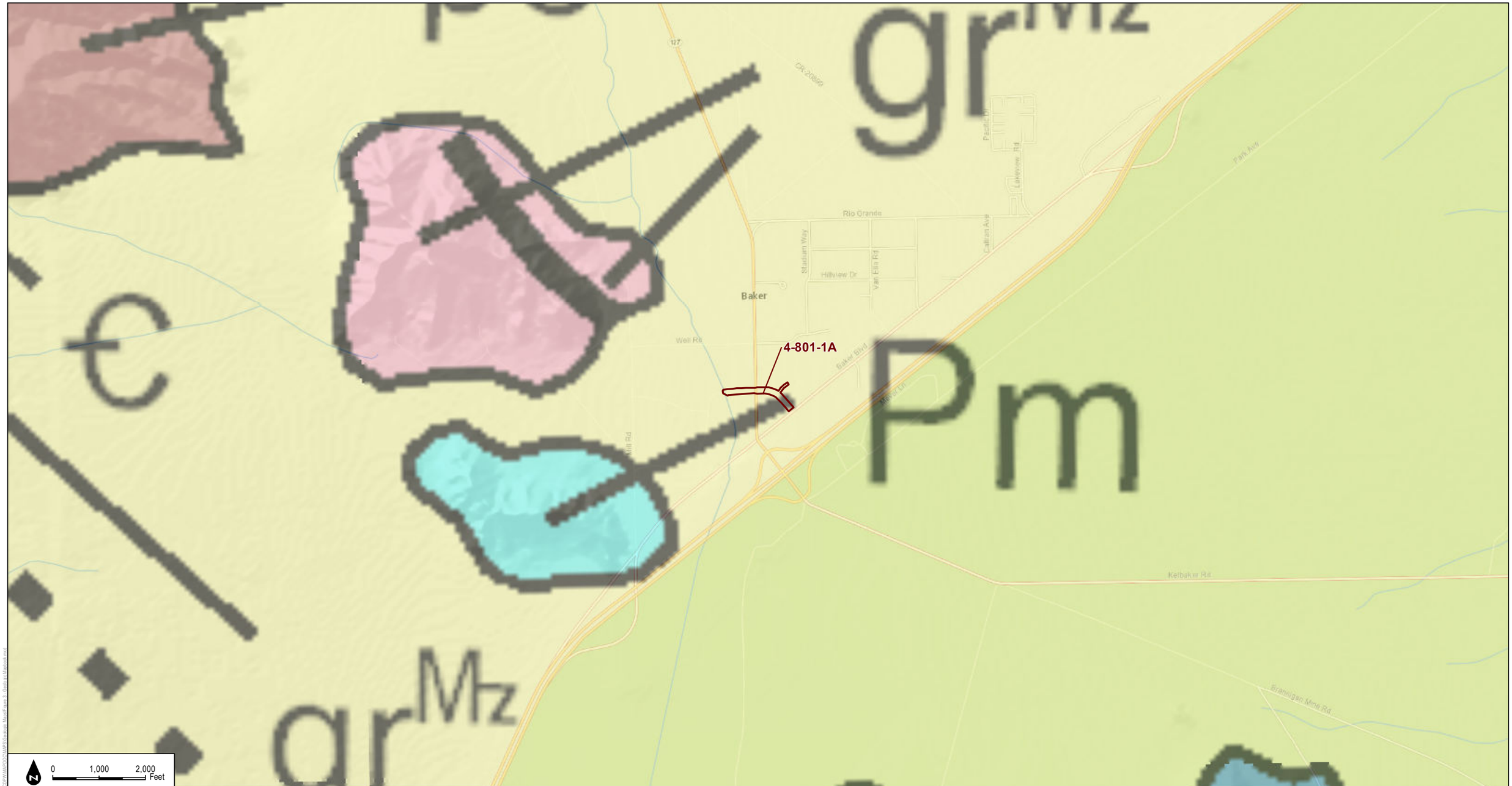
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

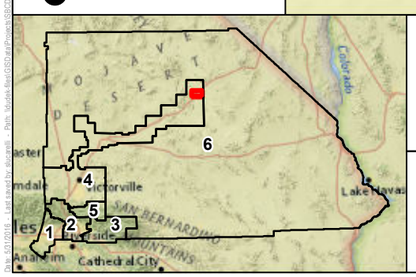
MAP 216

Zone 4 - Daggett Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

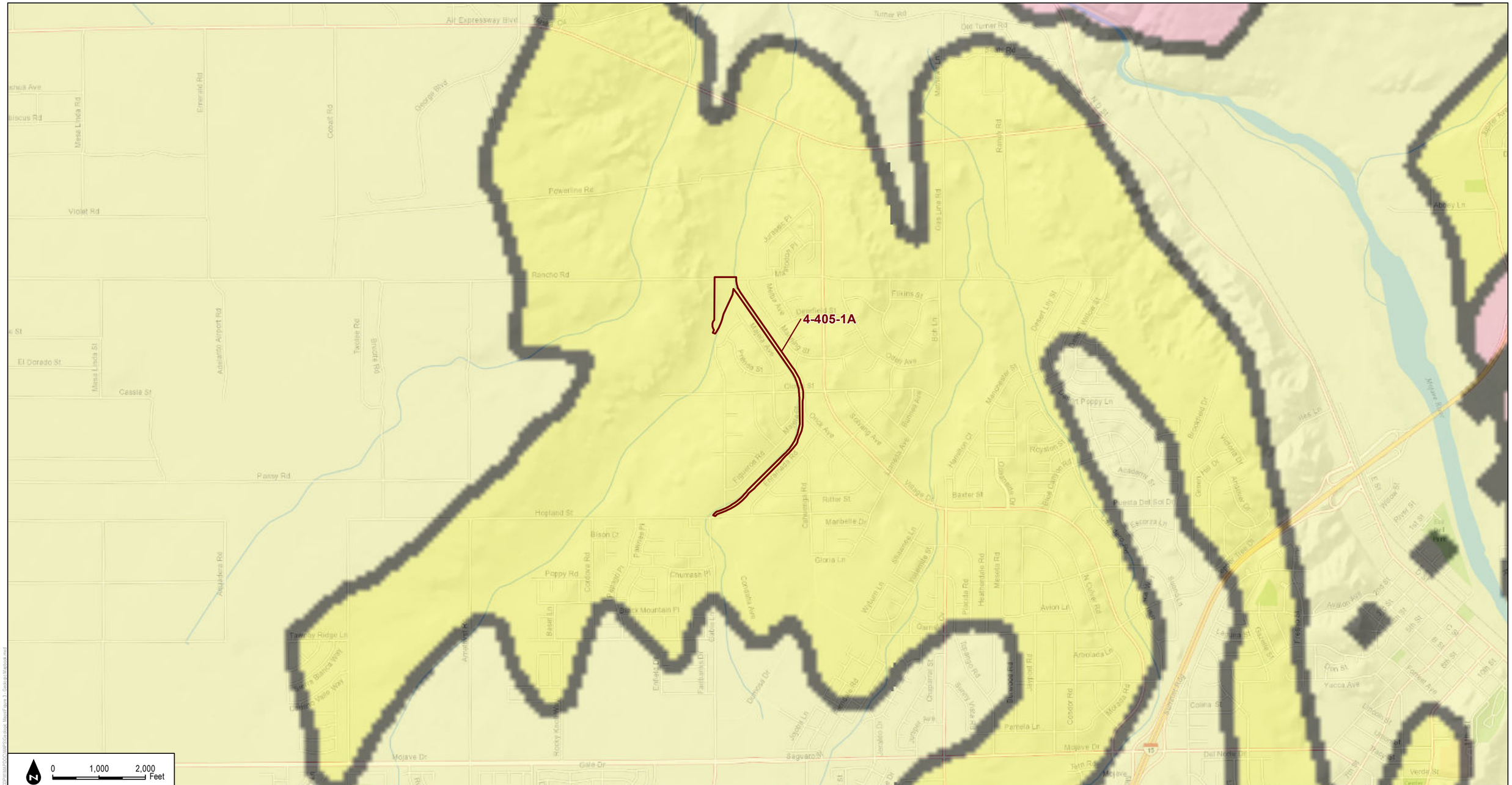
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

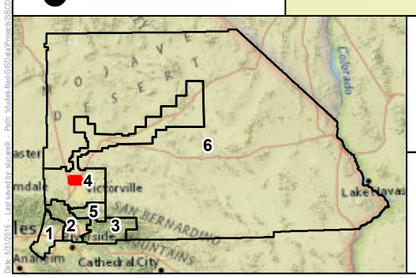
MAP 217

Zone 4 - East Baker Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

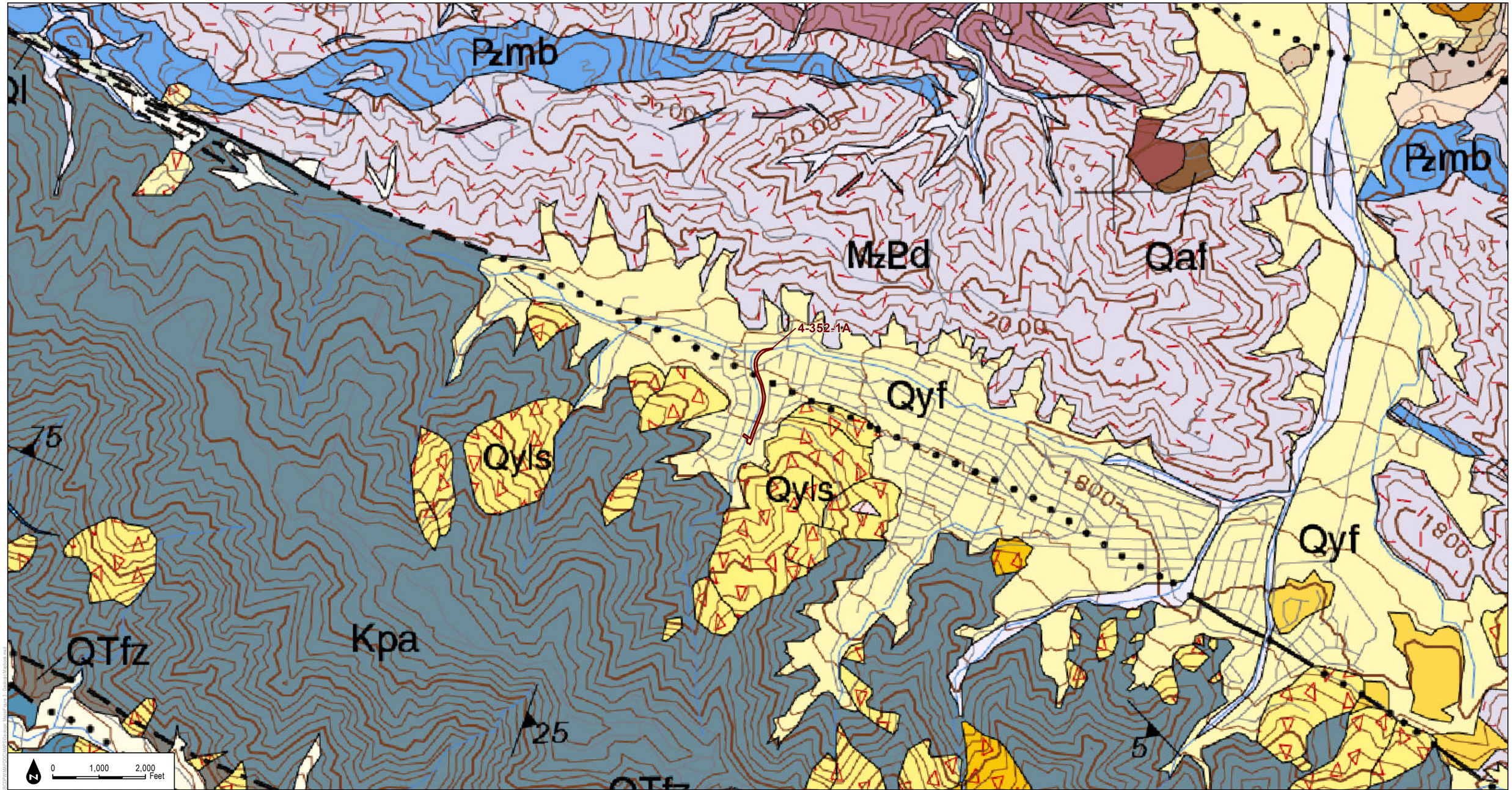
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

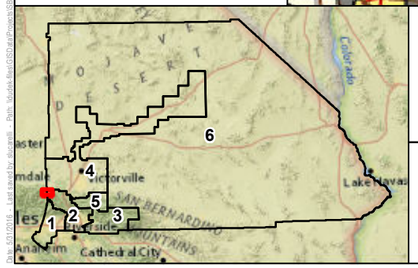
MAP 218

Zone 4 - El Evado Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

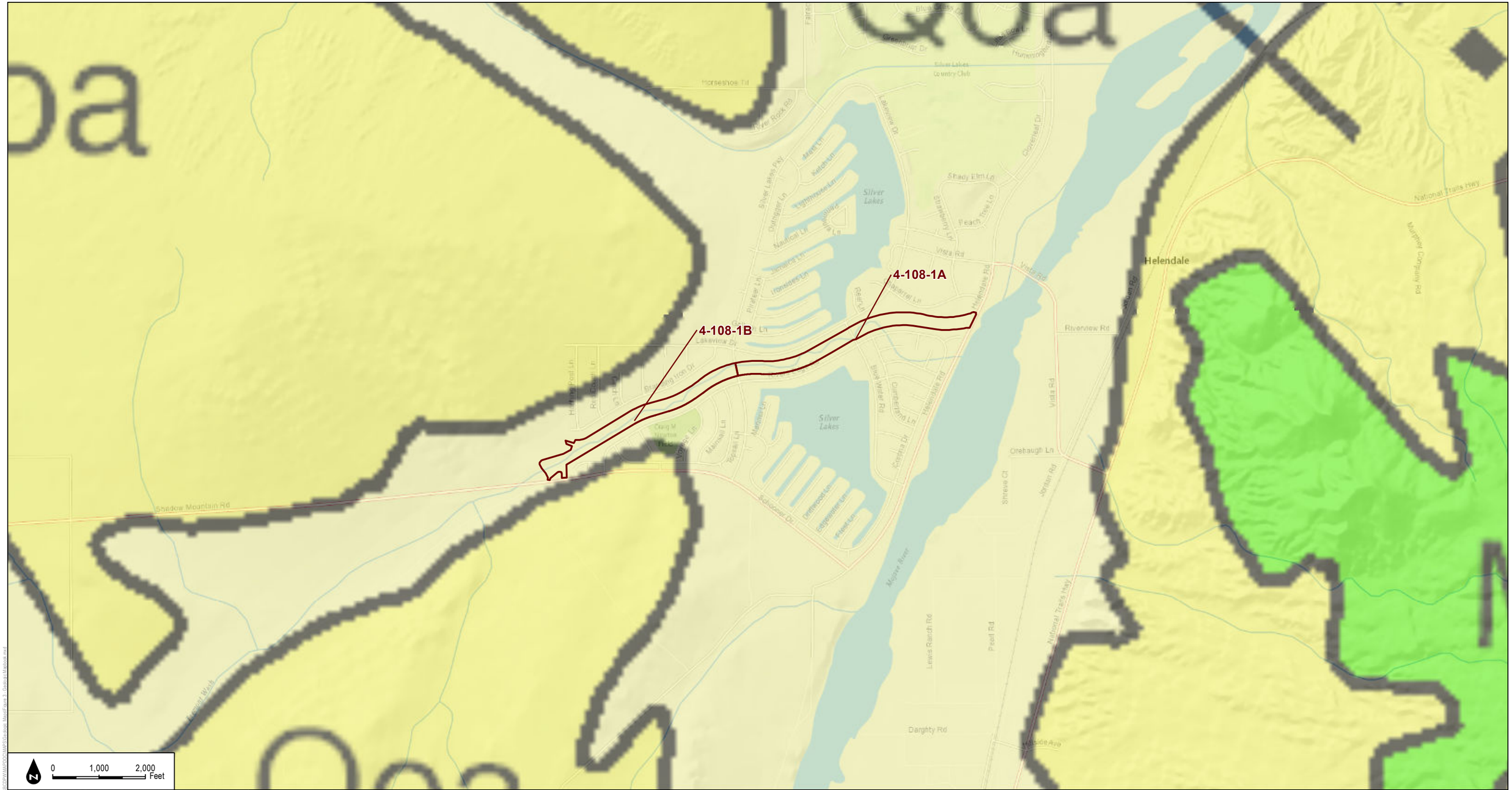
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

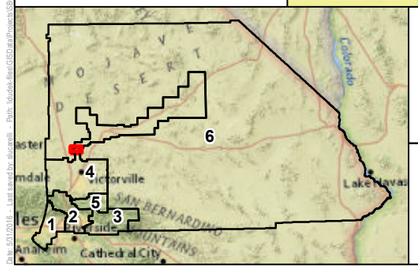
MAP 219

Zone 4 - Flume Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

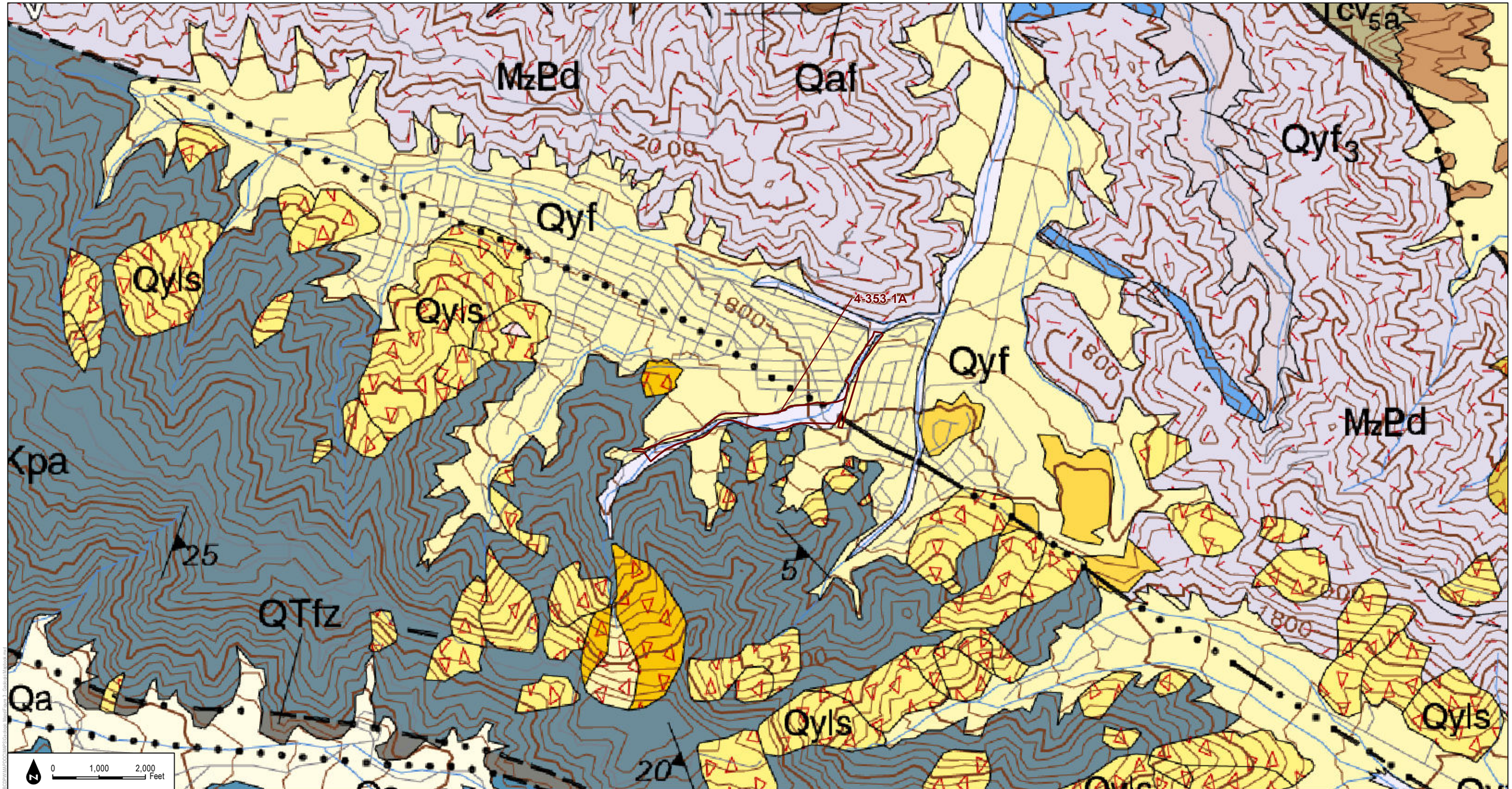
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

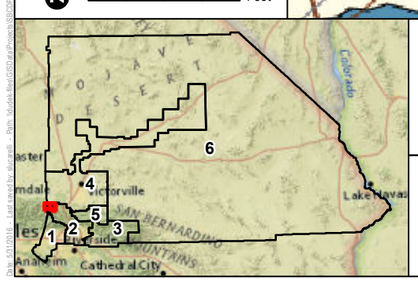
MAP 220

Zone 4 - Fremont Wash

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

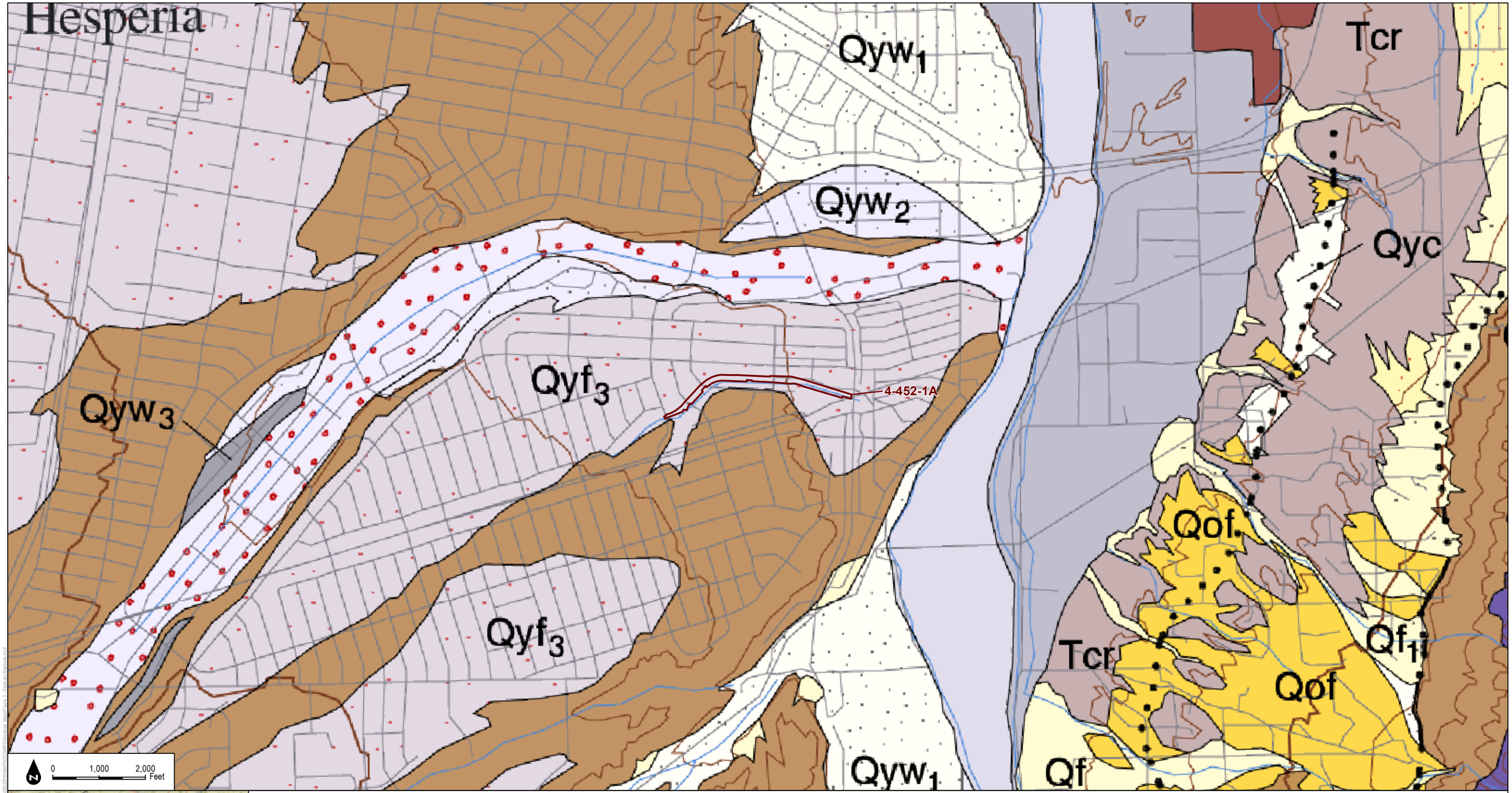
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

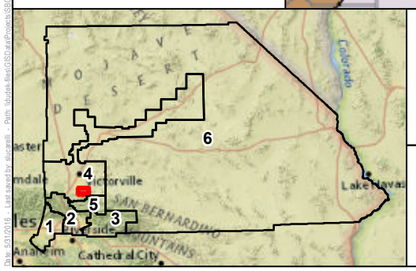
MAP 221

Zone 4 - Heath Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

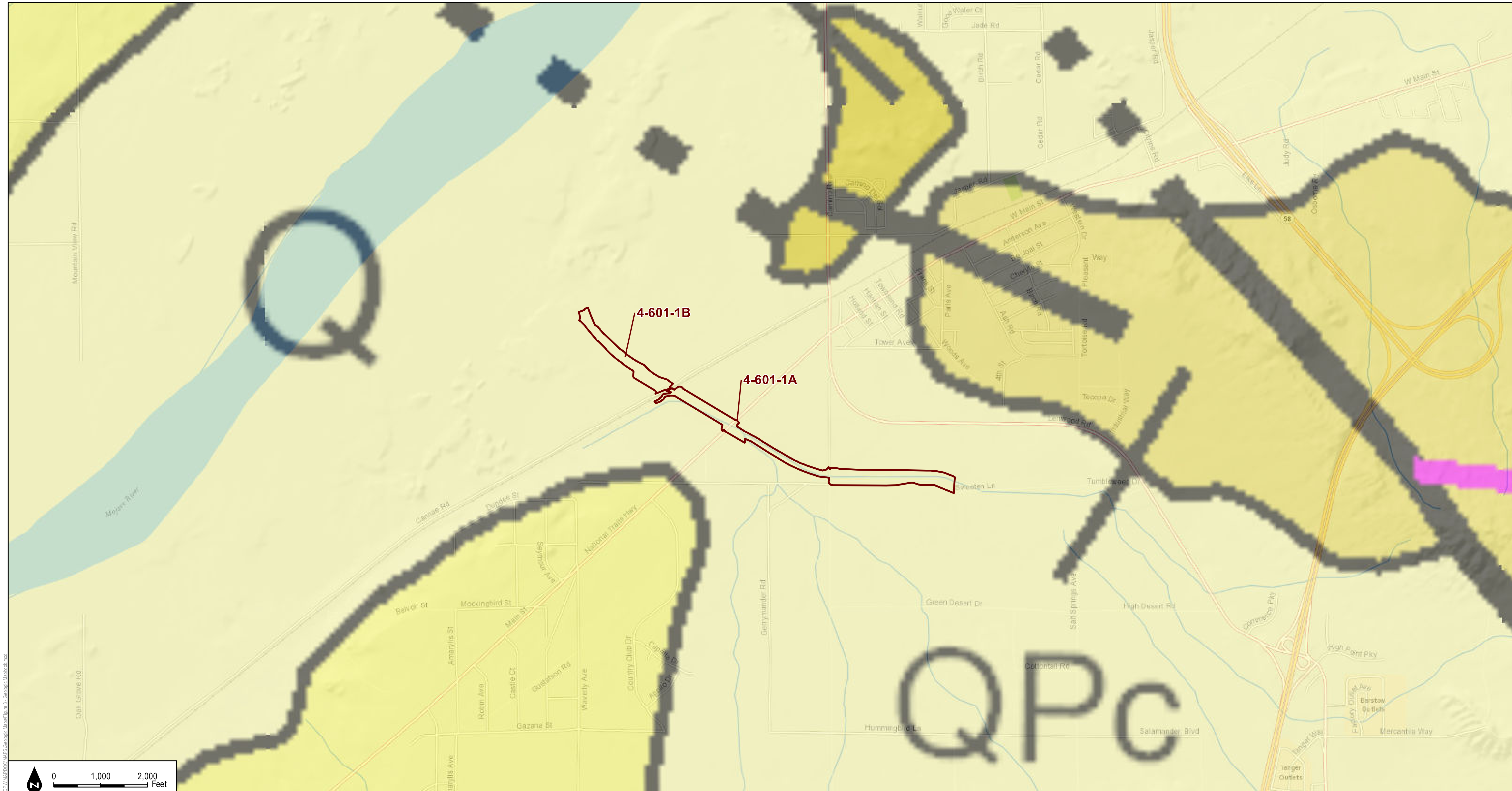
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

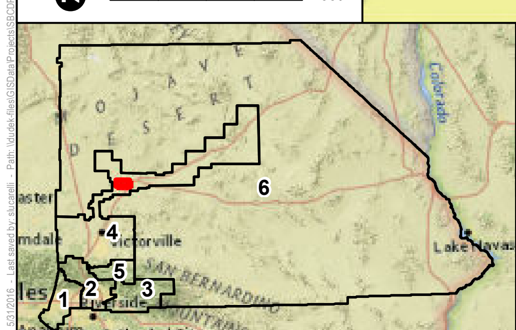
MAP 222

Zone 4 - Hesperia East Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

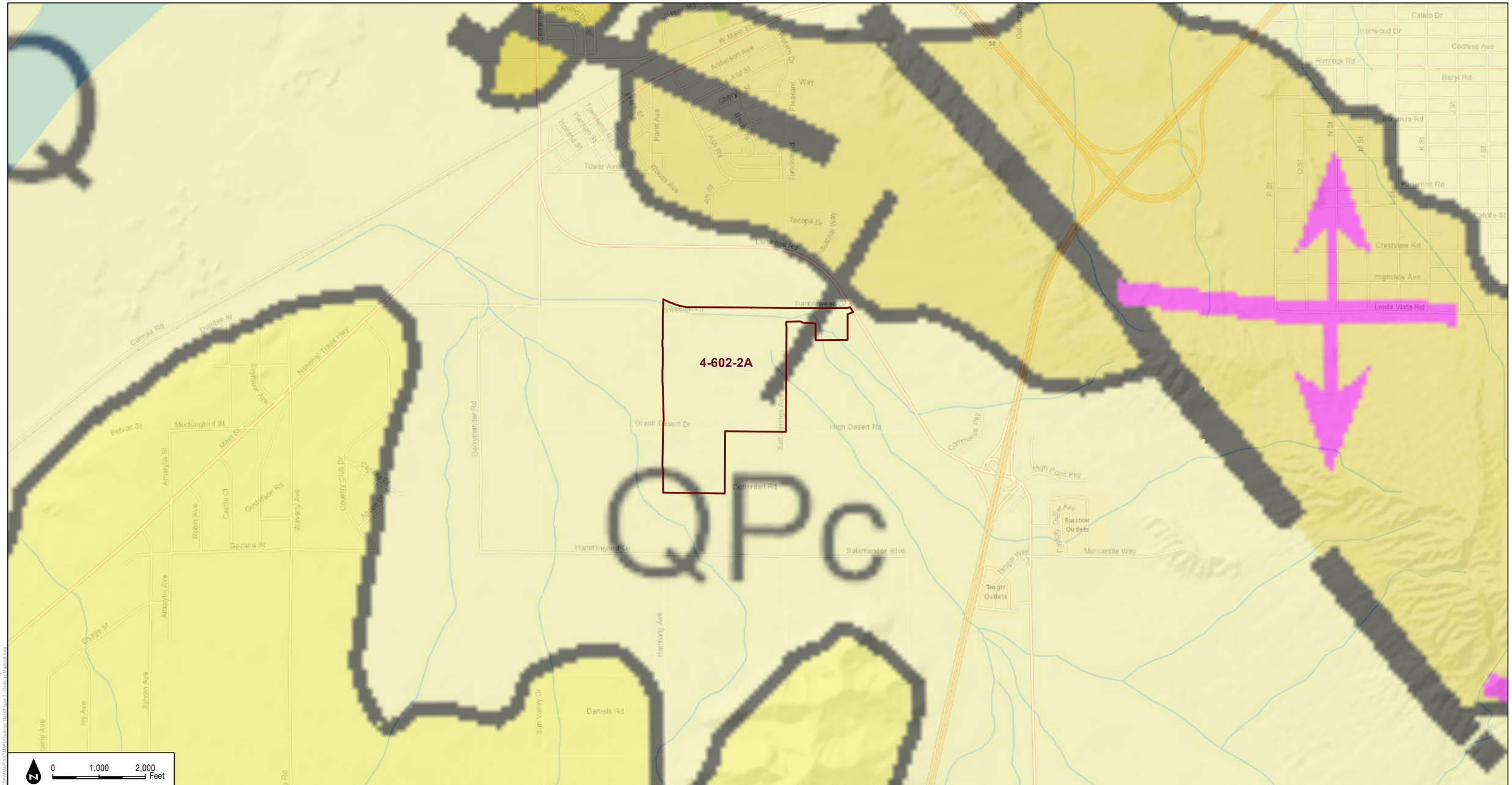
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

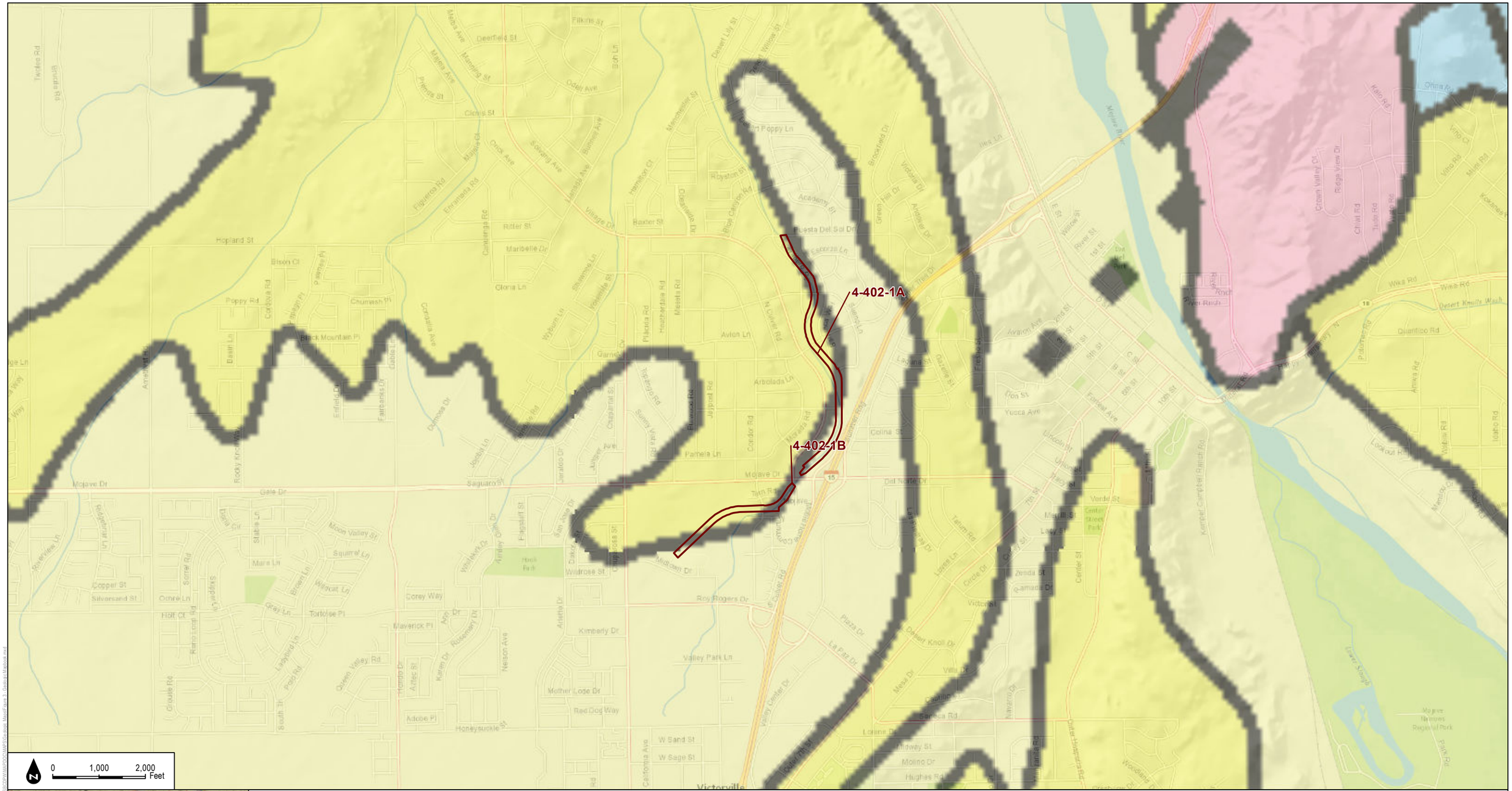
San Bernardino Department of Public Works

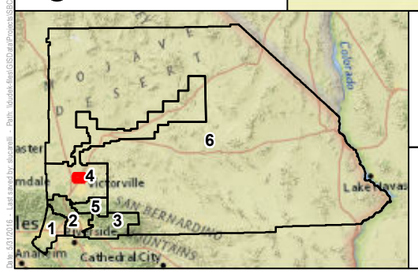
MAP 223

Zone 4 - Lenwood Channel

Geologic Map


4-602-2A
QPc
Tumbleweed Rd
Green Desert Dr
High Desert Rd
Cottontail Rd
Salamander Blvd
Hummingbird Ln
Daniels Rd
Harriotty Ave
Sun Valley Dr
Salt Springs Ave
Commerce Pky
High Point Pky
Barstow Outlets
Mercantile Way
Tanger Way
Tanger Outlets
Factory Outlet Ave
Gerrymander Rd
Carmel Rd
Dundee St
National Trails Hwy
Belvoir St
Mockingbird St
Main St
Seminole Ave
Amarylla St
Robin Ave
Castle Ct
Gustafson Rd
Waverly Ave
Country Club Dr
Gazania St
Arrowhead Dr
Arrowhead Ave
Arrowhead Rd
Arrowhead Way
Tecopa Dr
Lenwood Rd
Industrial Way
Tower Ave
Holland St
Hanlan St
Townsend Rd
Pine Ave
Willow Ave
Ash Rd
Cherry St
Pleasant Way
Anderson Ave
W Main St
Sylvan Ave
Ivy Ave
Osage St
Callico Dr
Ironwood Dr
Cochise Ave
Rimrock Rd
Beryl Rd
Bonanza Rd
Paramint Rd
Calcite St
Crestview Rd
Highview Ave
Linda Vista Rd
N St
O St
P St
K St
J St
I St
0 1,000 2,000 Feet
Redbook Polygons
1:24,000
DUDEK
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society
MAP 224
Zone 4 - Lenwood Spreading Grounds
San Bernardino Department of Public Works
Geologic Map





Redbook Polygons

1:24,000

DUDEK

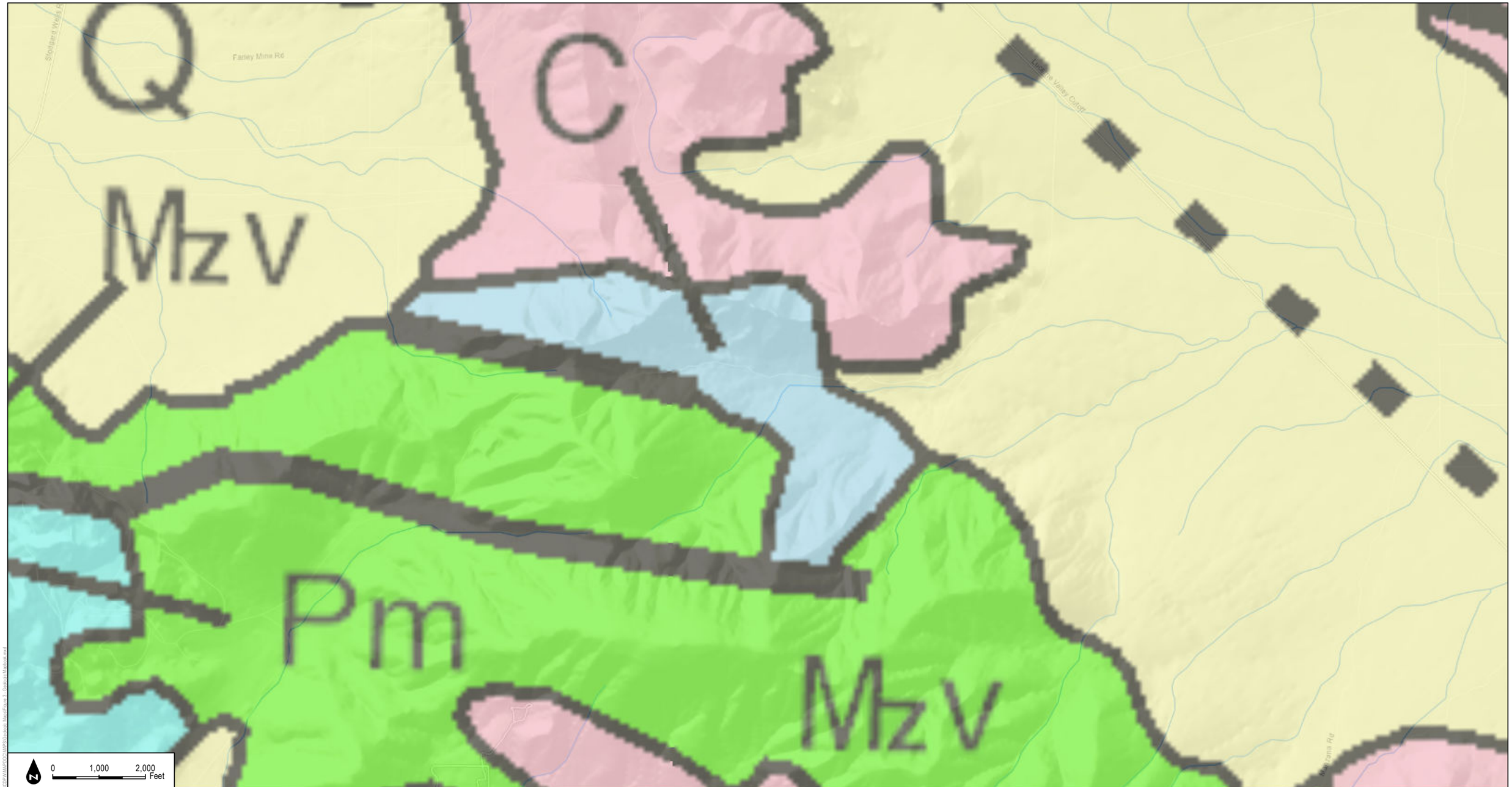
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

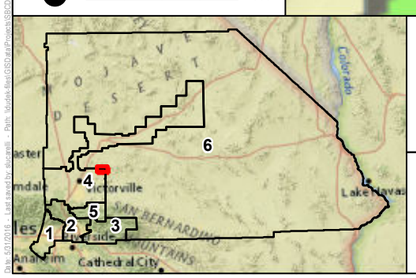
MAP 225

Zone 4 - Mojave Drive Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

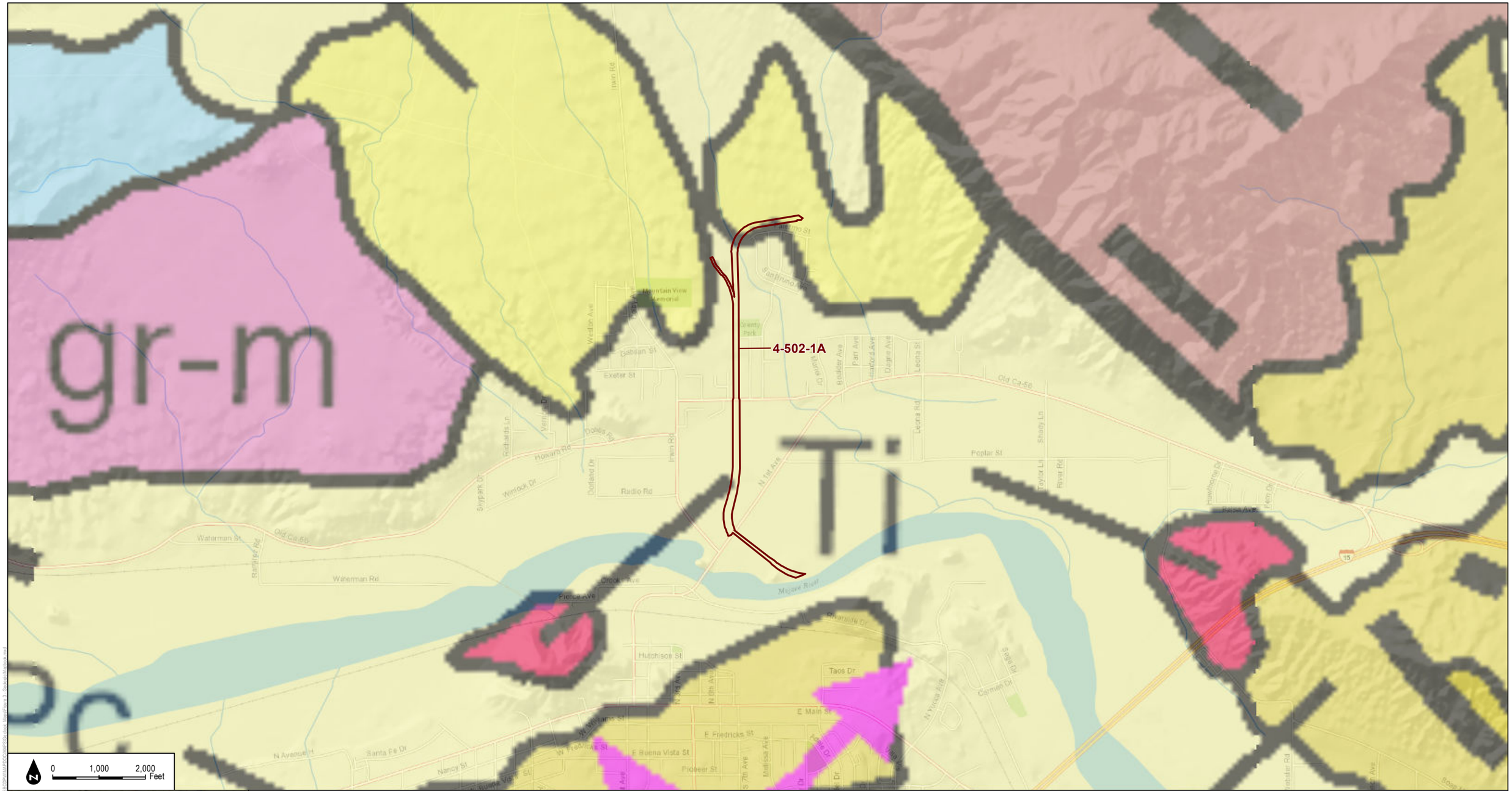
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

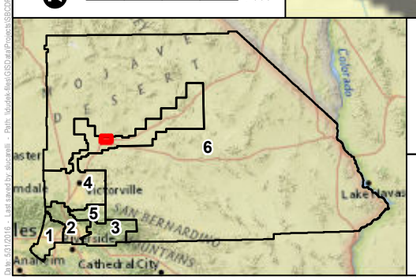
MAP 226

Zone 4 - Mojave River

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

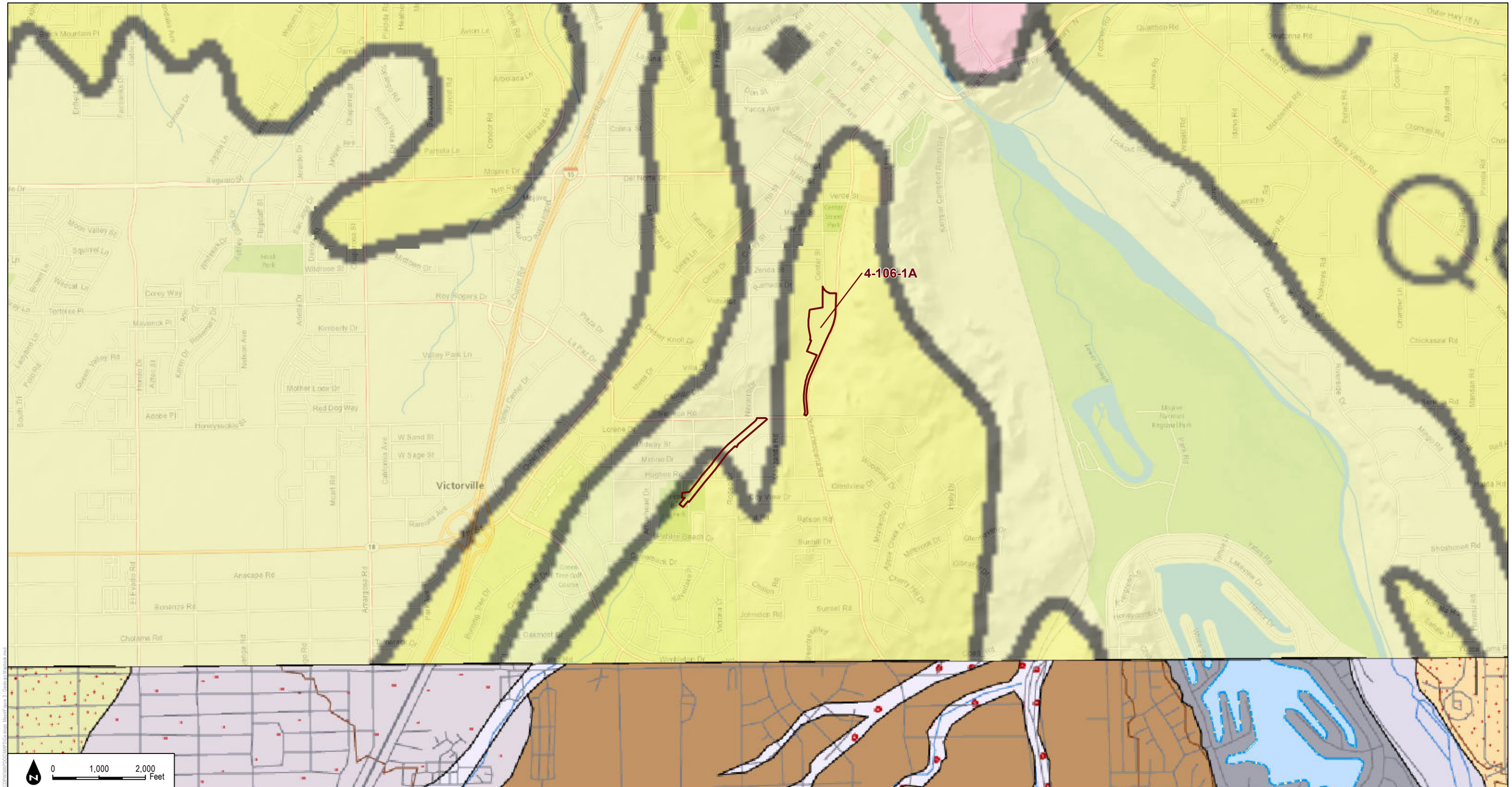
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

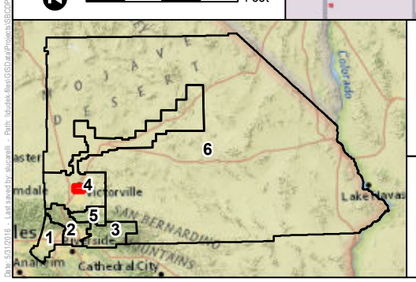
MAP 227

Zone 4 - North Barstow Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 228

Zone 4 - Oro Grande Wash

San Bernardino Department of Public Works

Geologic Map

Qyf

Qf2

4-354-1D

Qof

Qof

Qof3

Qof3

Qsh

1400

Qyf1

Qyf

Qvof

Qf

Qof3

Qw

Qsh

Qsh

Qof

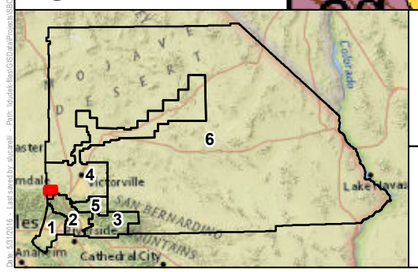
Qsh

Qsh

Qf1

Tpp

0 1,000 2,000 Feet



Redbook Polygons

1:24,000

DUDEK

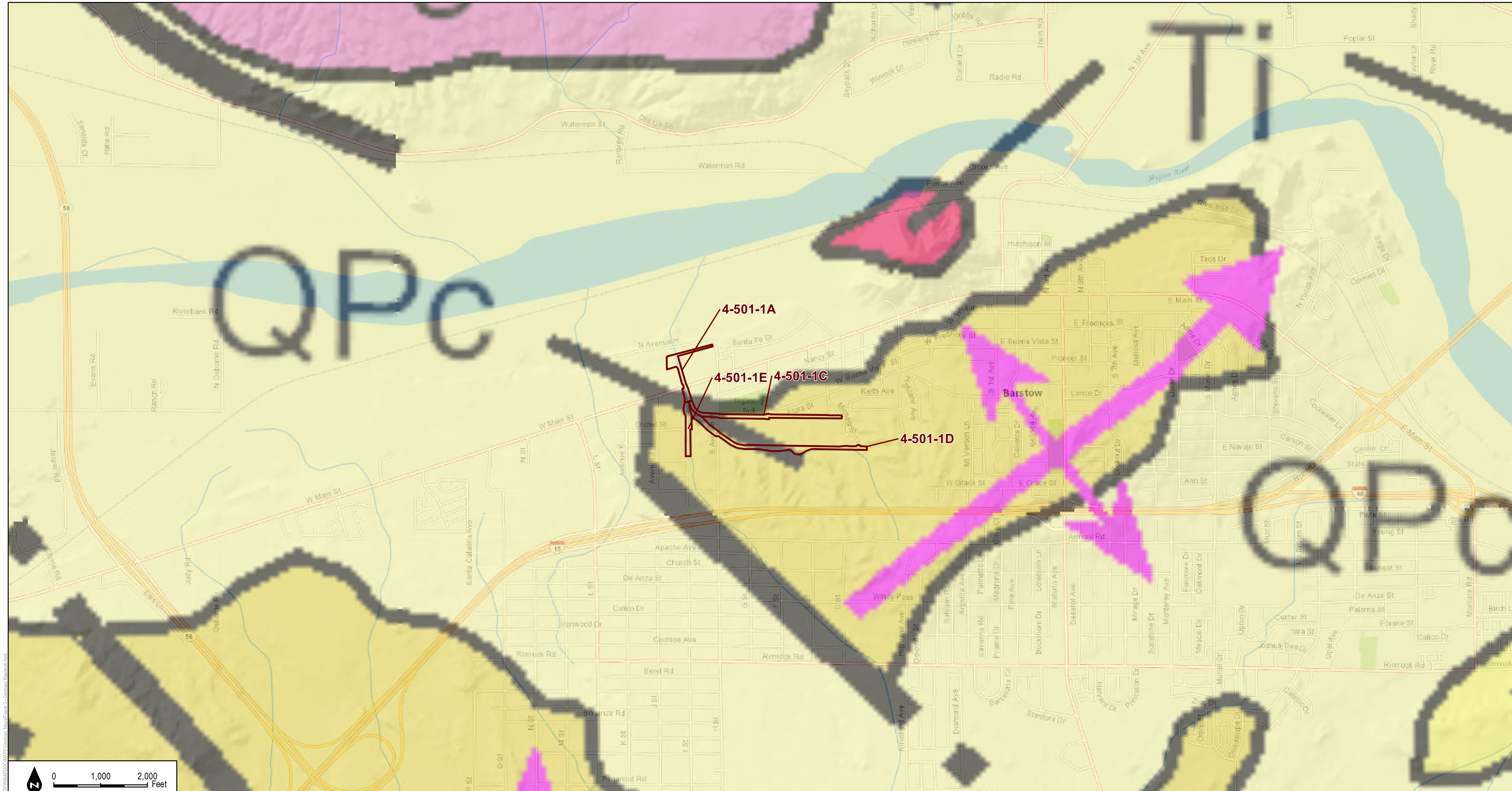
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

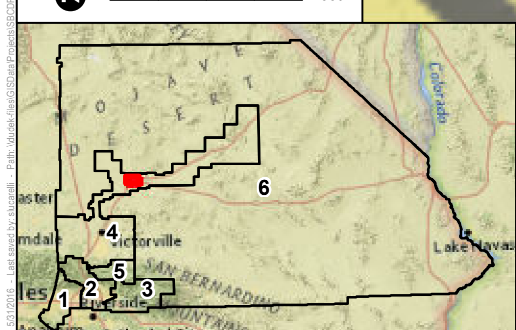
MAP 229

Zone 4 - Sheep Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

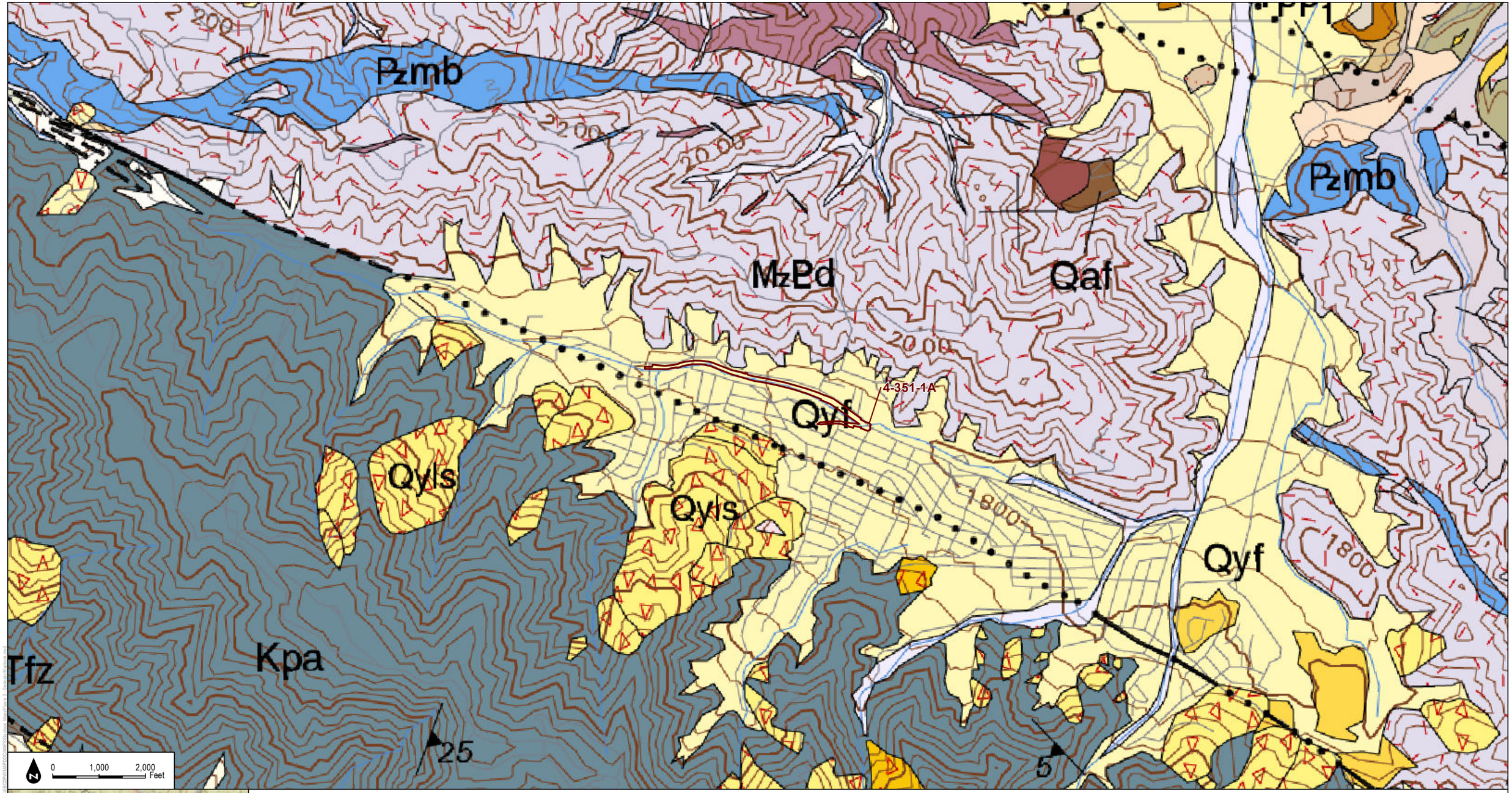
San Bernardino Department of Public Works

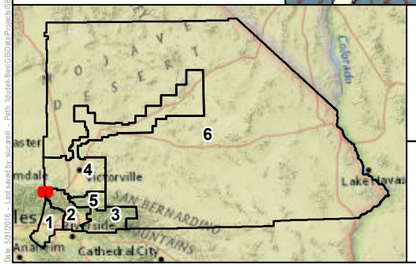
MAP 230

Zone 4 - Southwest Barstow Channel

Geologic Map

Date: 5/31/2016 - Last saved by: slucarelli - Path: \\dudek-files\GISData\Projects\SBCDPW\MAPDOC\MAPS\Geologic Maps\Figure 3 - Geologic Mapbook.mxd





Redbook Polygons

1:24,000

DUDEK

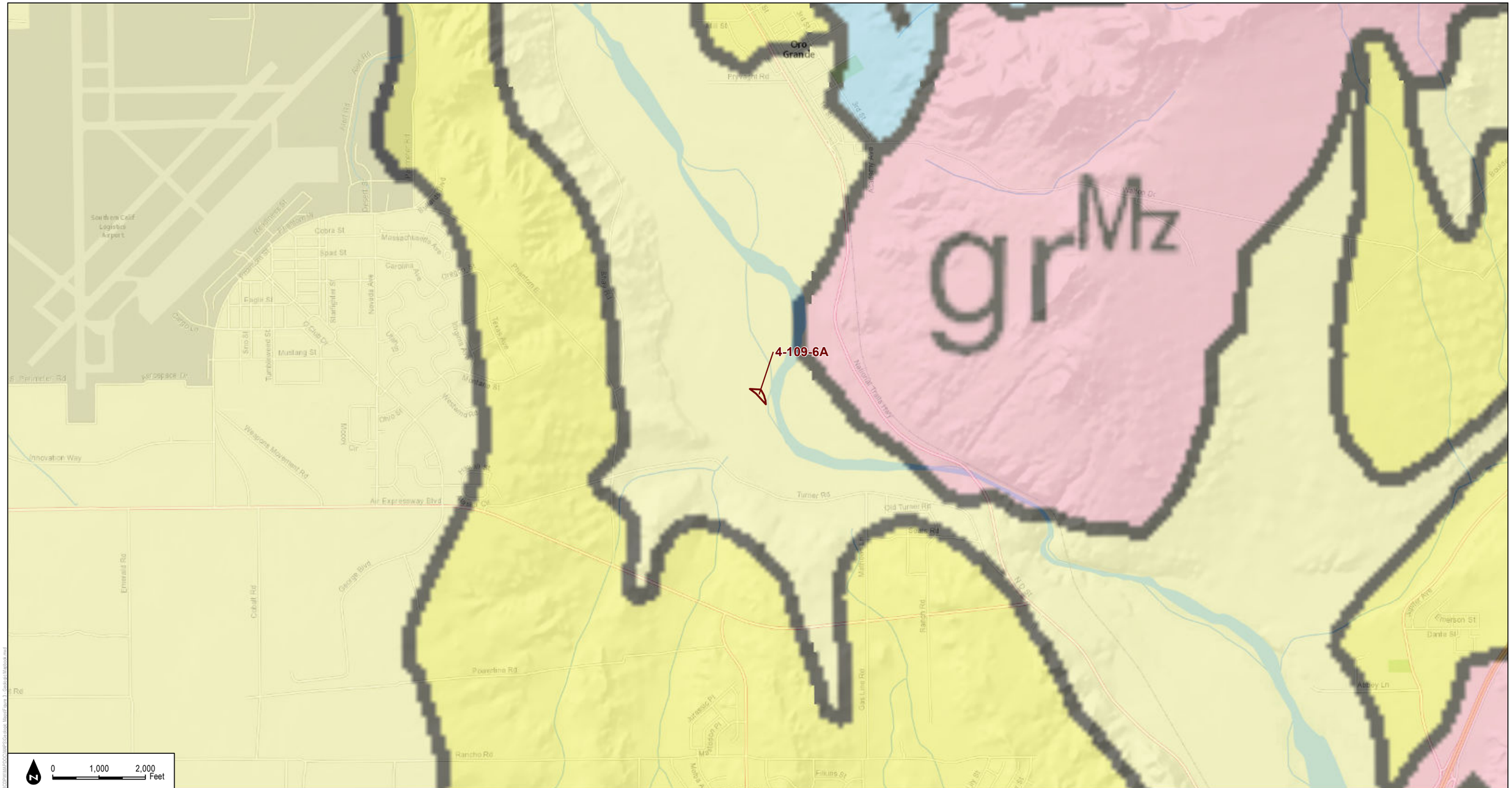
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

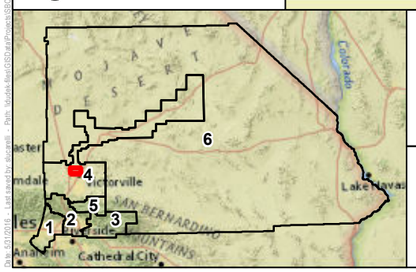
MAP 231

Zone 4 - Swarthout Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

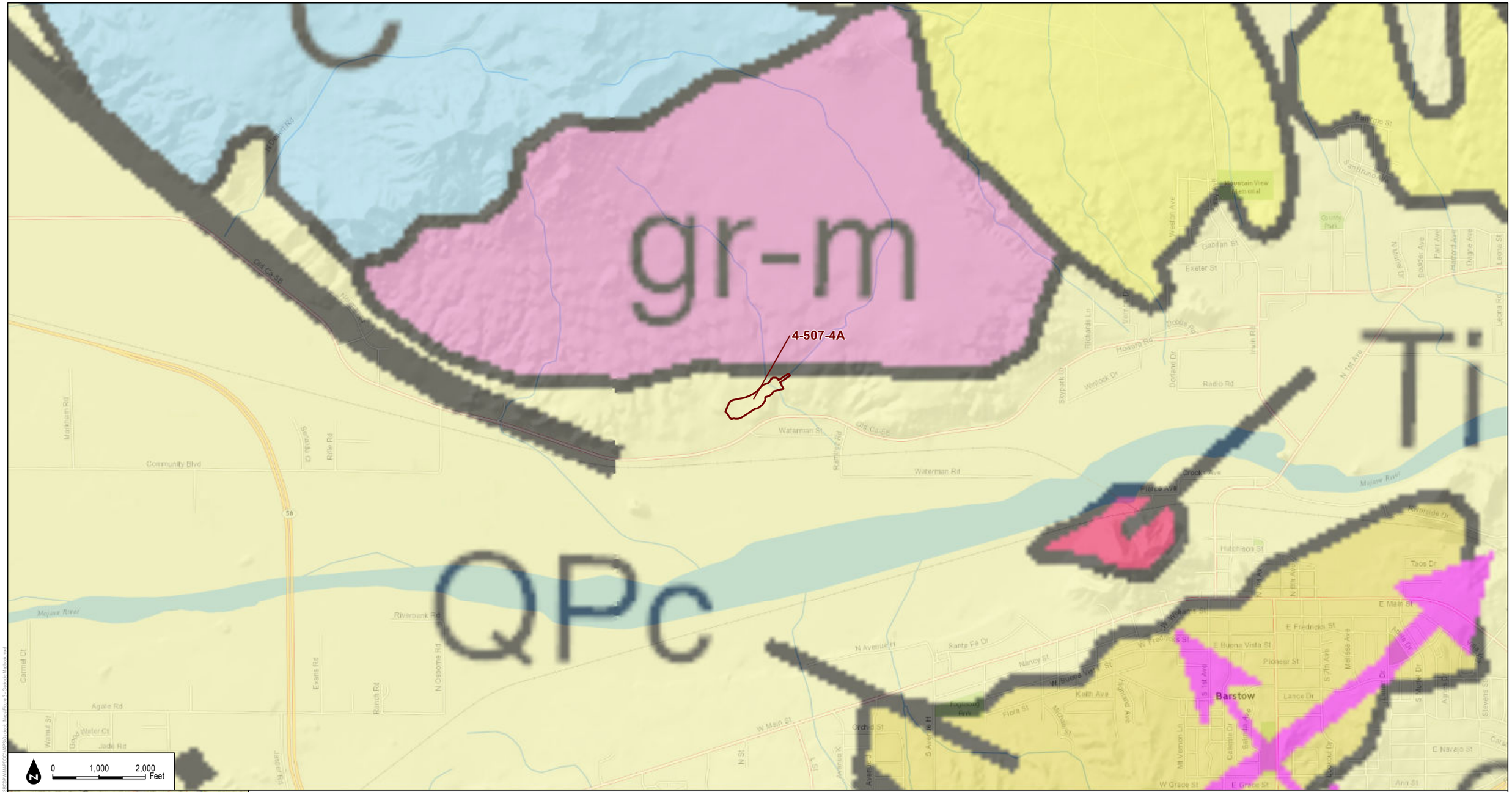
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

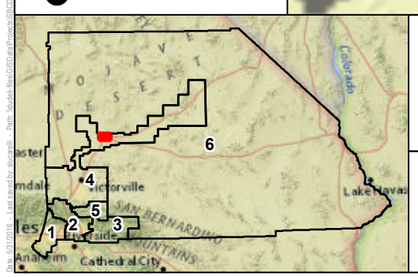
MAP 232

Zone 4 - Turner Ditch

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

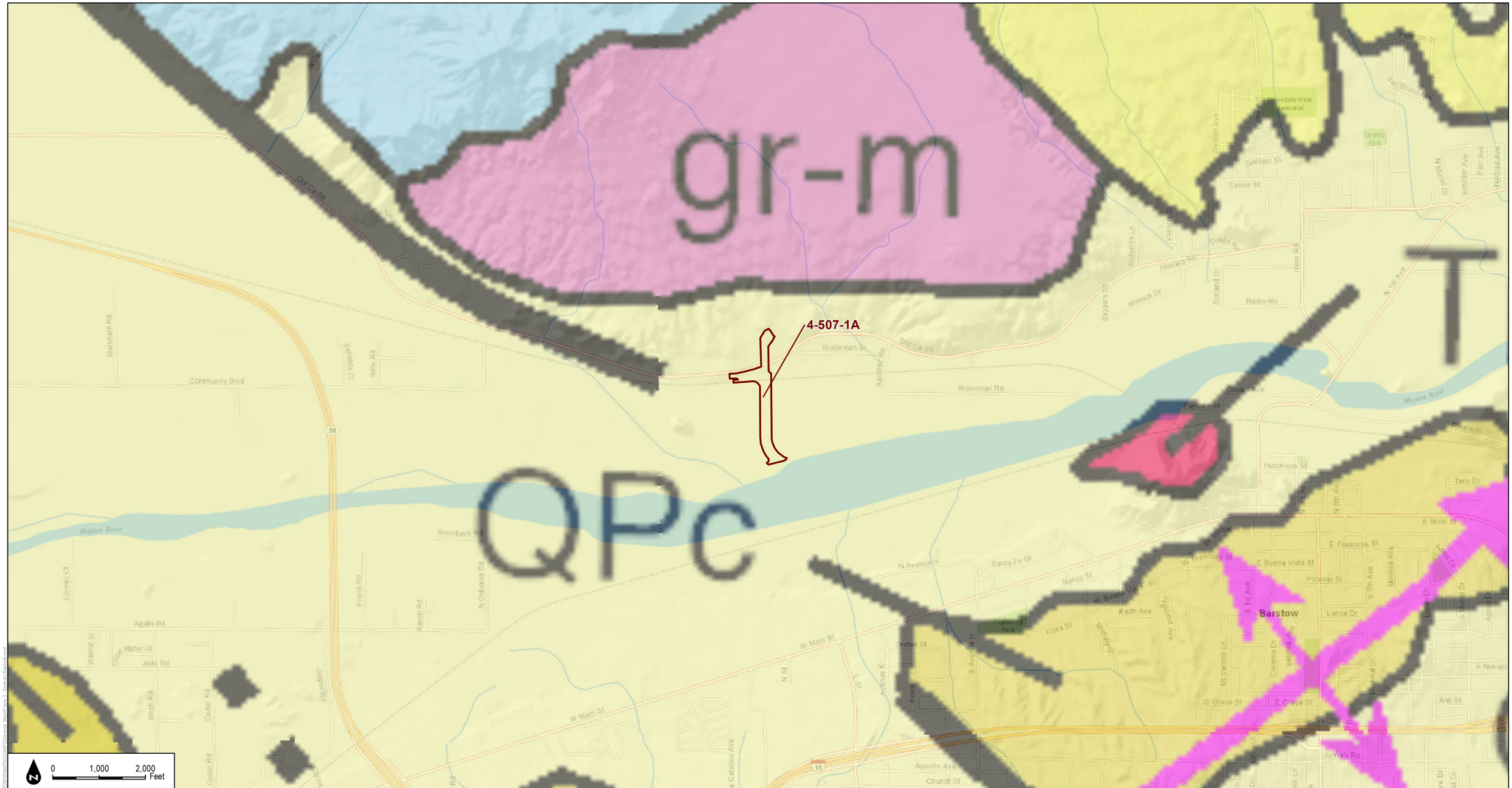
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

MAP 233

Zone 4 - Waterman Road Basin

San Bernardino Department of Public Works

Geologic Map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QPc
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Barstow
Mojave River
Waterman Rd
Community Blvd
Riverbank Rd
Old Ca-58
Radio Rd
Hutchison St
Taos Dr
E Main St
W Main St
Santa Fe Dr
Nancy St
Keith Ave
Flora St
Lance Dr
E Buena Vista St
Pioneer St
E Fredricks St
W Grace St
E Grace St
Ashley Rd
Church St
Apache Ave
Avenue H
N Avenue H
Markham Rd
Agate Rd
Jade Rd
Birch Rd
Cedar Rd
Evans Rd
Ranch Rd
N Dabonne Rd
Central Ct
Walnut St
Old Water Ct
Sandra Ct
Rifle Rd
Runway Rd
Skyport Dr
Richards Ln
Winlock Dr
Howard Rd
Dobbs Rd
Dorland Dr
Irwin Rd
N 1st Ave
Pleasant Ave
Clock Ave
Pierson St
Exeter St
Gibbon St
Mt Vernon Ln
Calleria Dr
Belleria Ave
Mesquite Ln
Highland Ave
Monday St
Mesquite Dr
Mesquite Ln
Melissa Ave
S 7th Ave
S 1st Ave
E Navajo
Ann St
Riverside Dr
Lake Havasu
Cathedral City
Anaheim
Victorville
Redlands
Colorado
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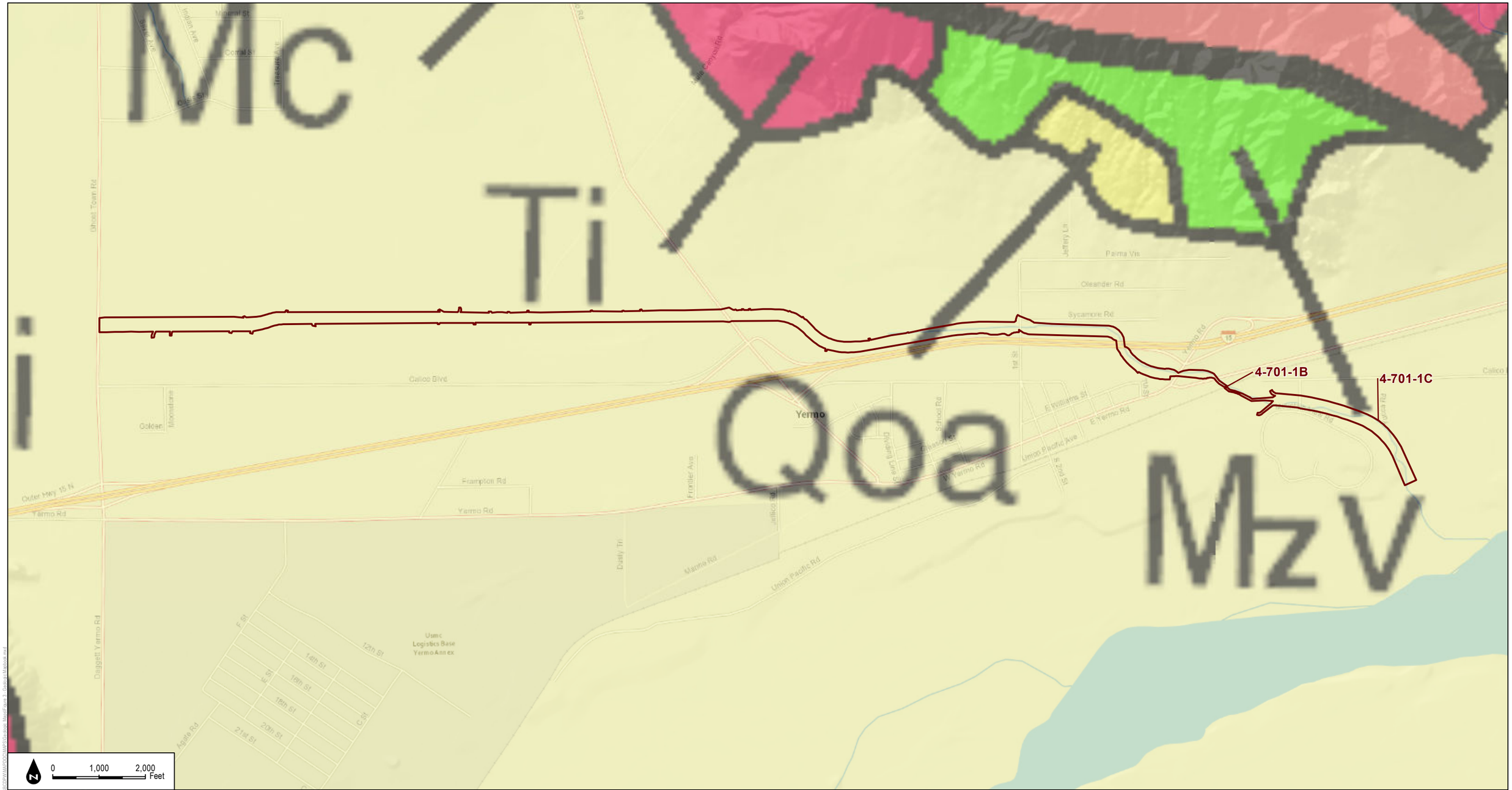
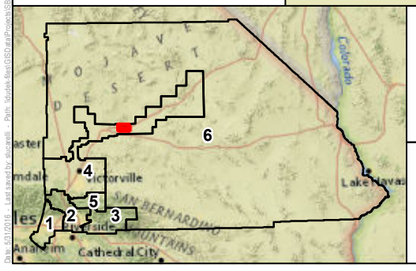
Redbook Polygons
1:24,000
DUDEK
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society
MAP 234
Zone 4 - Waterman Road Channel
San Bernardino Department of Public Works
Geologic Map





Redbook Polygons

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DUDEK

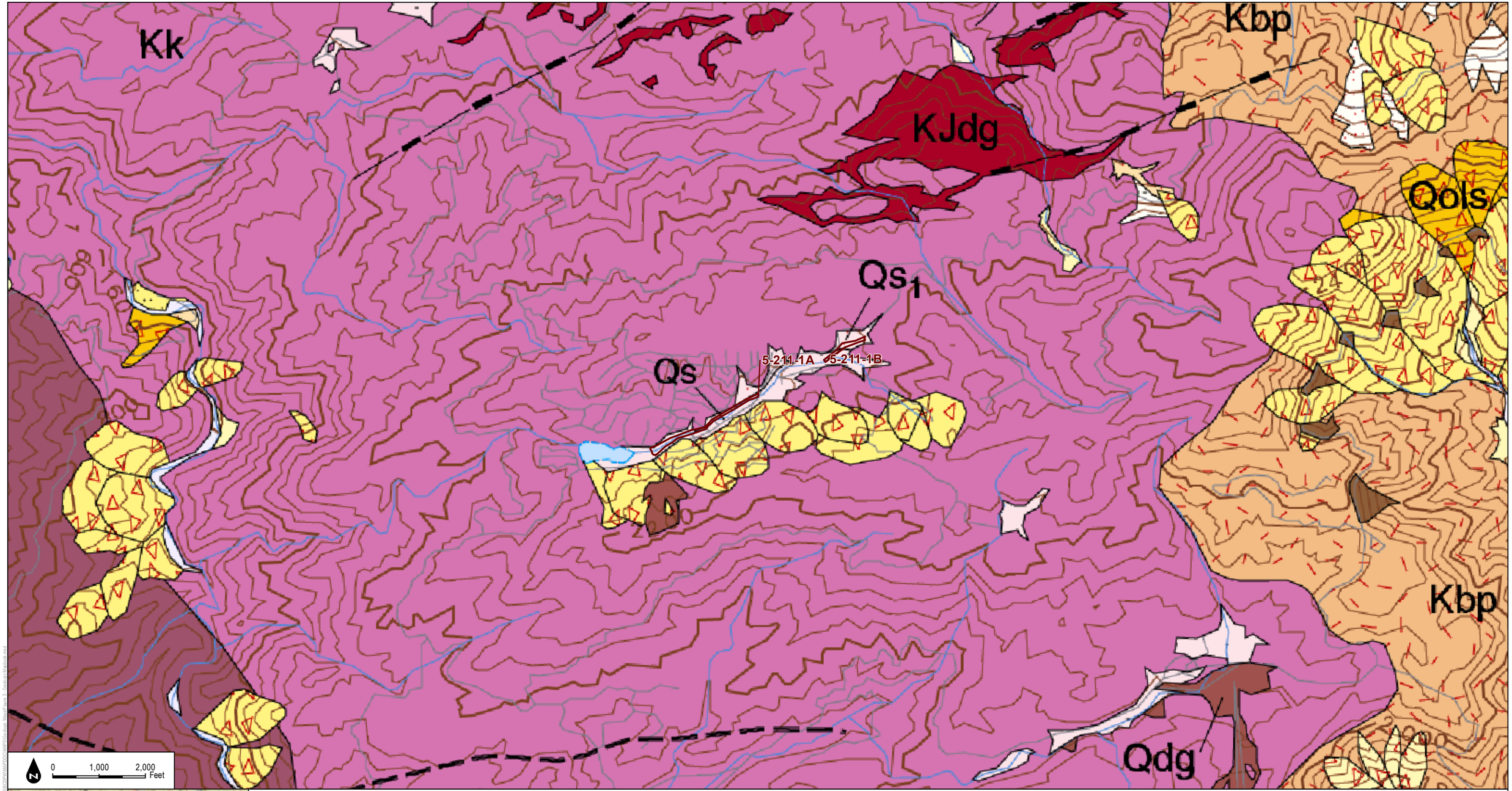
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

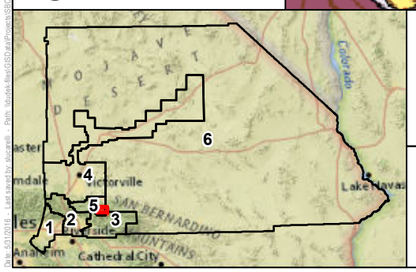
MAP 235

Zone 4 - Yermo Flood Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

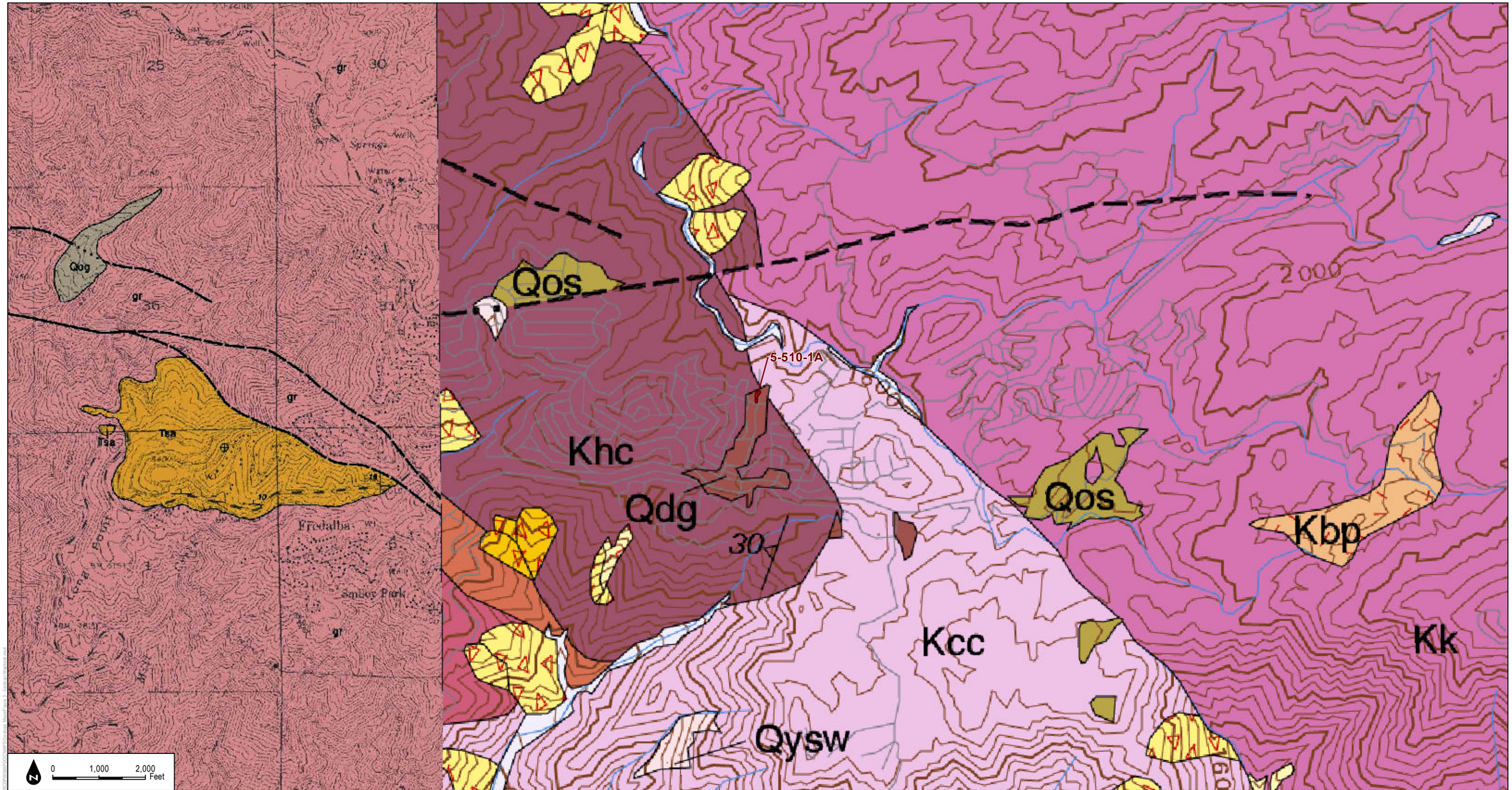
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

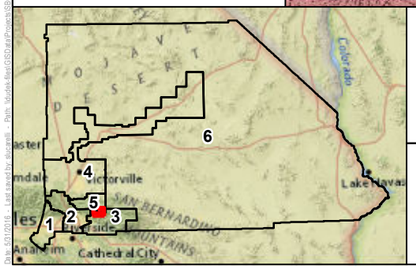
MAP 236

Zone 5 - Green Valley Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

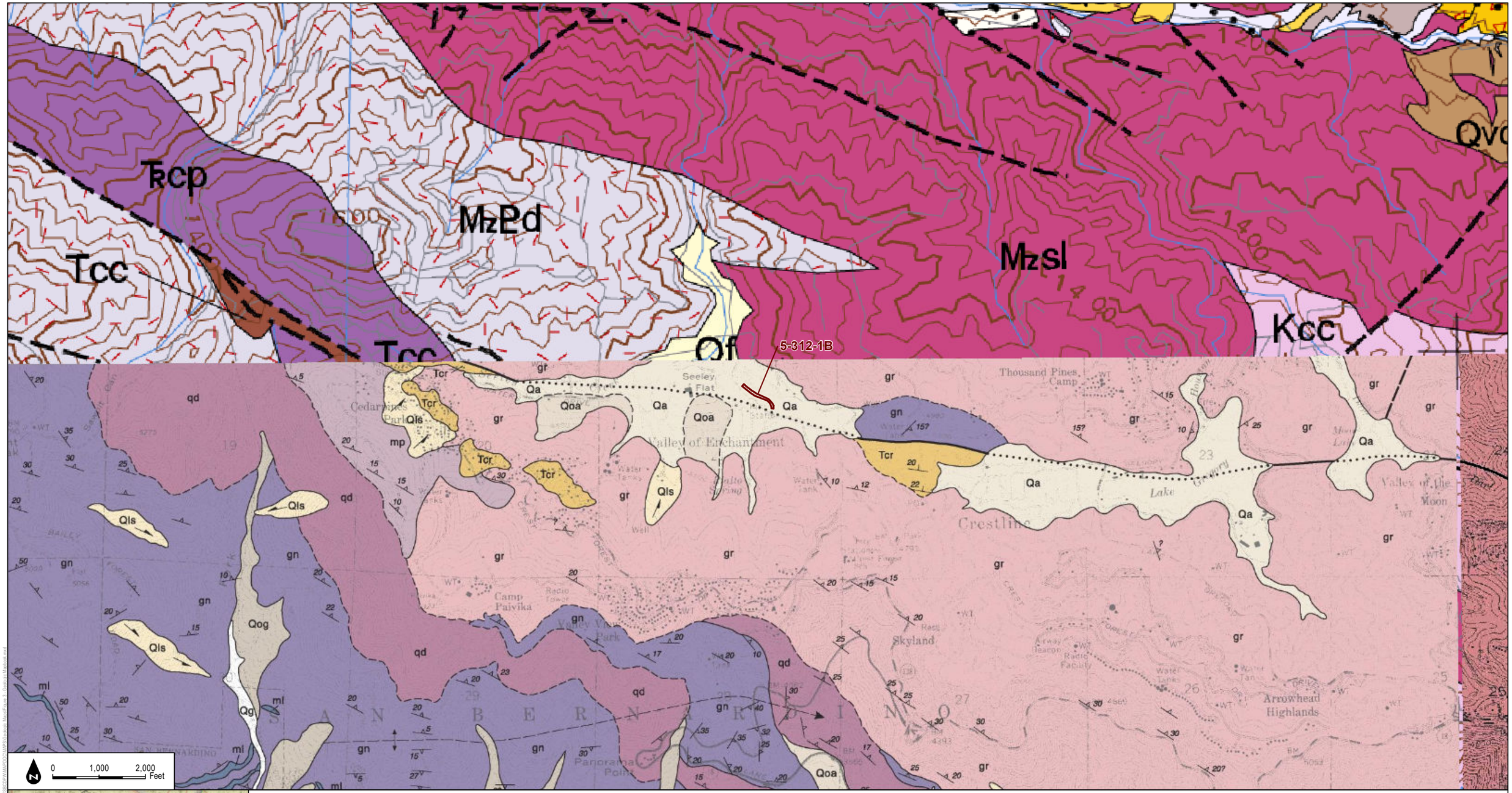
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

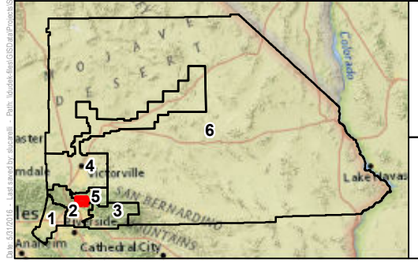
MAP 237

Zone 5 - Hunsaker Drain

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

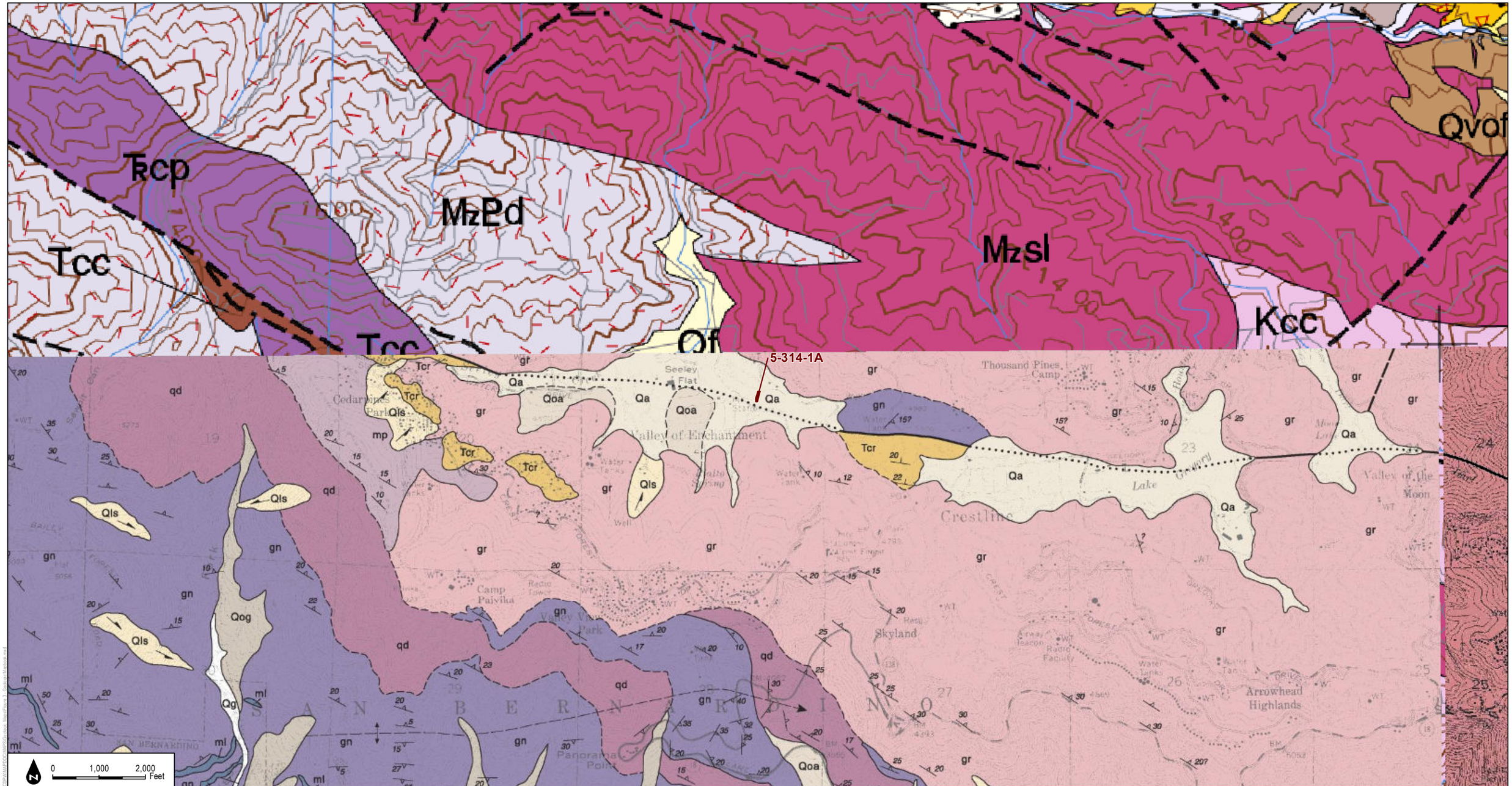
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

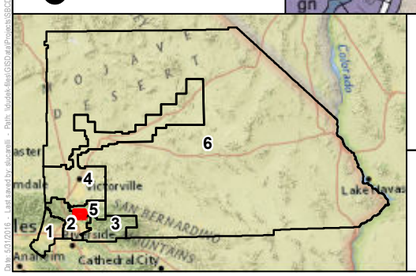
MAP 238

Zone 5 - Seeley Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

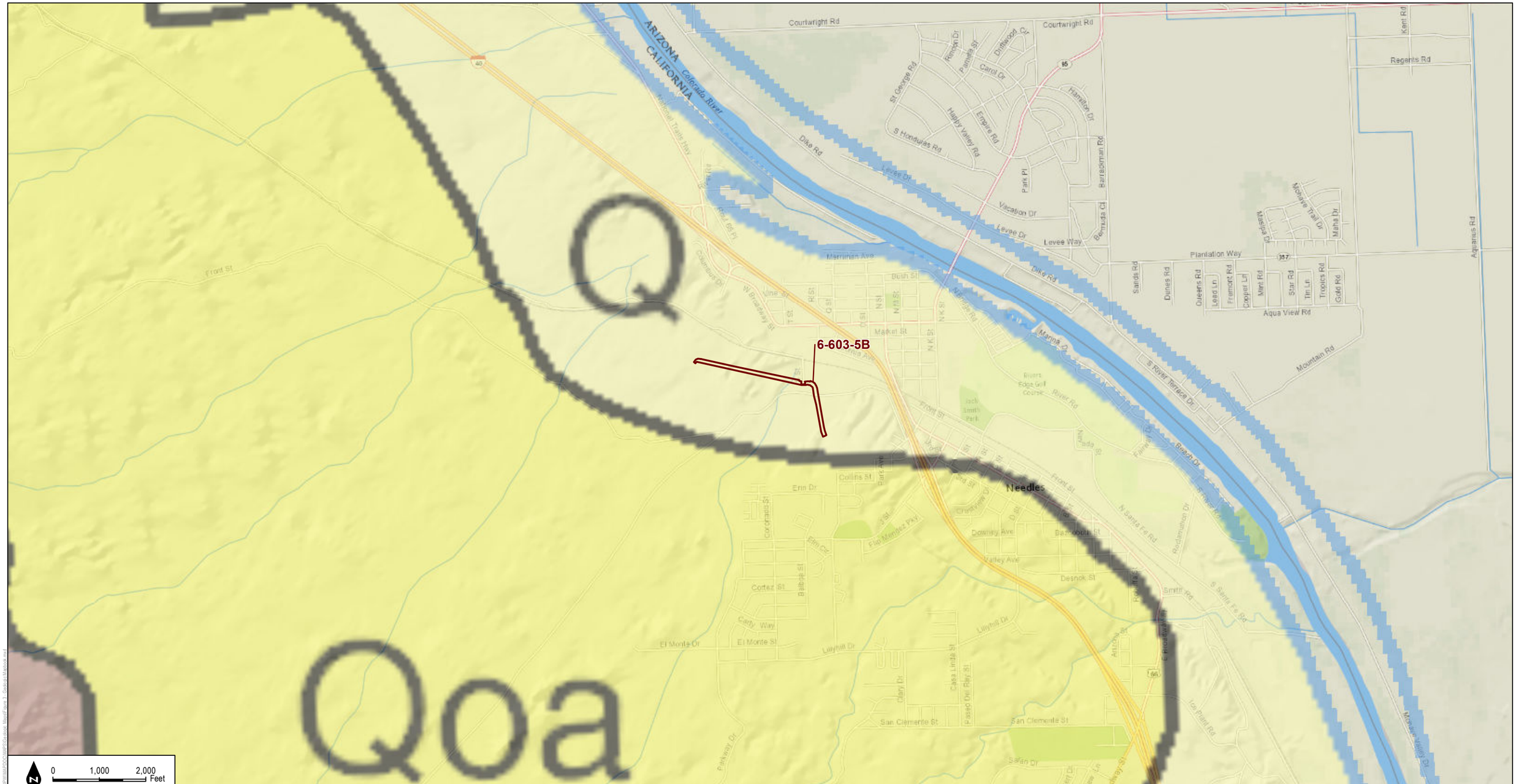
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

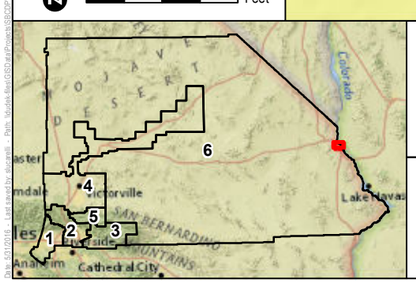
MAP 239

Zone 5 - Sequoia Drain

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

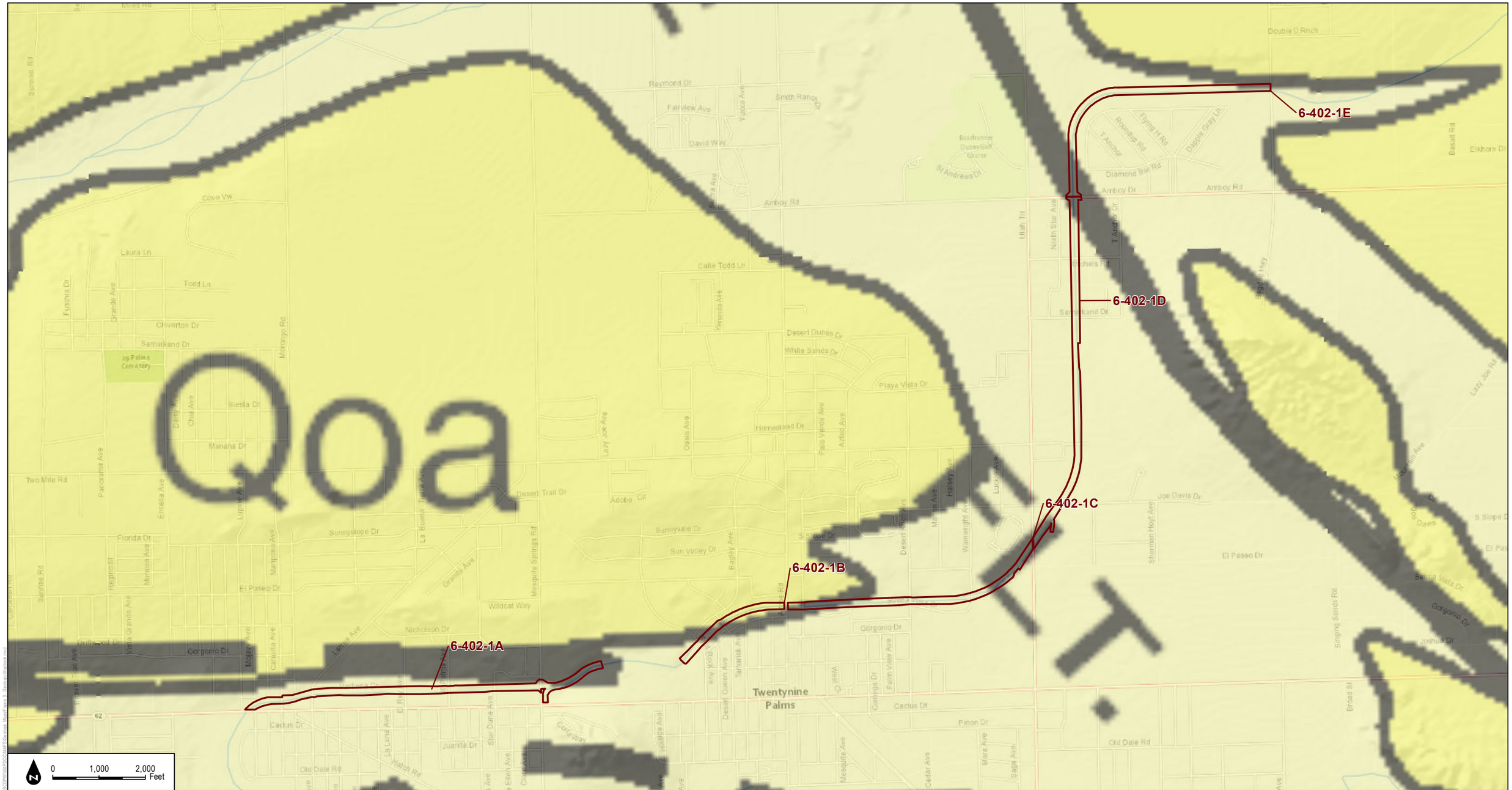
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

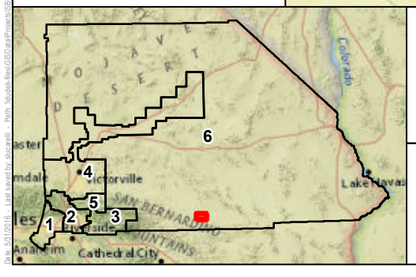
MAP 240

Zone 6 - "S" Street Channel Inlet Levee

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

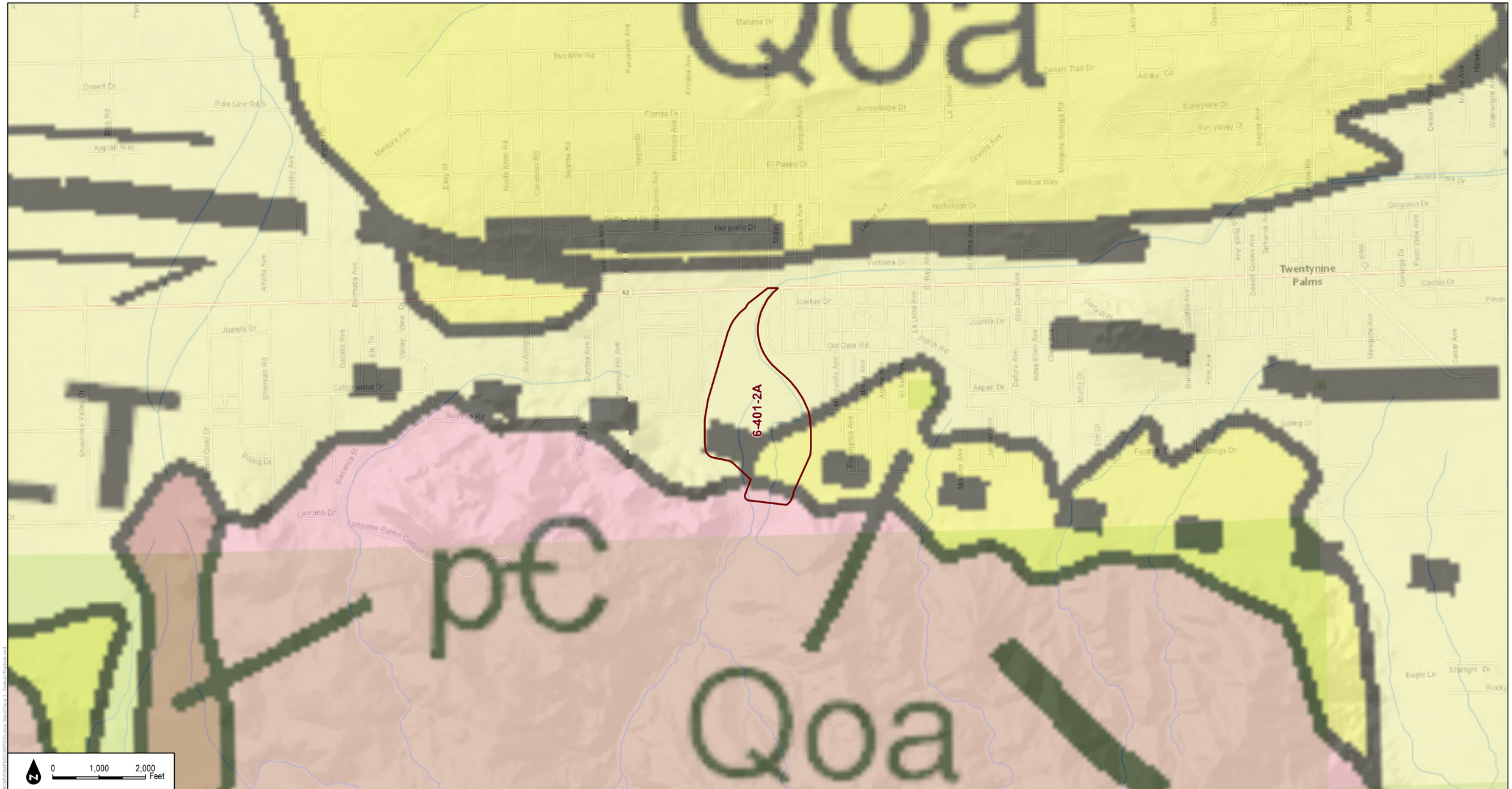
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

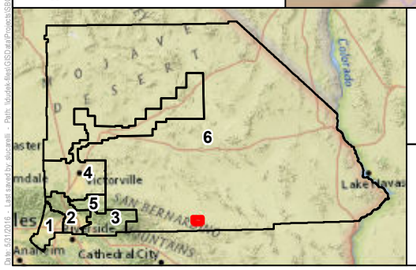
MAP 241

Zone 6 - 29 Palms Flood Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

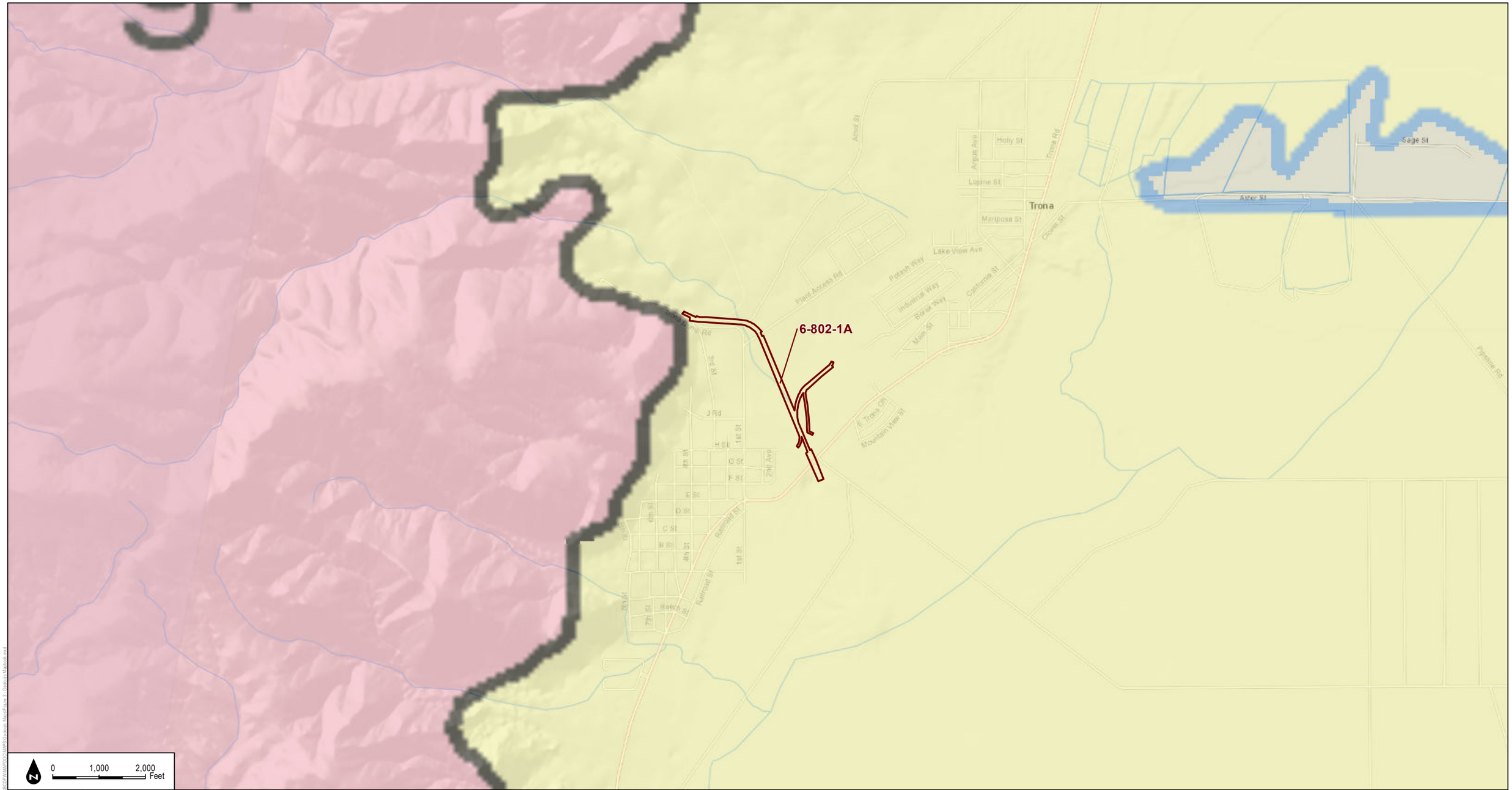
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

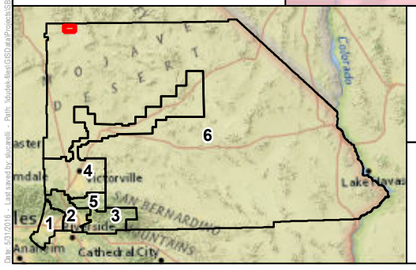
MAP 242

Zone 6 - 49 Palms Spreading Grounds

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

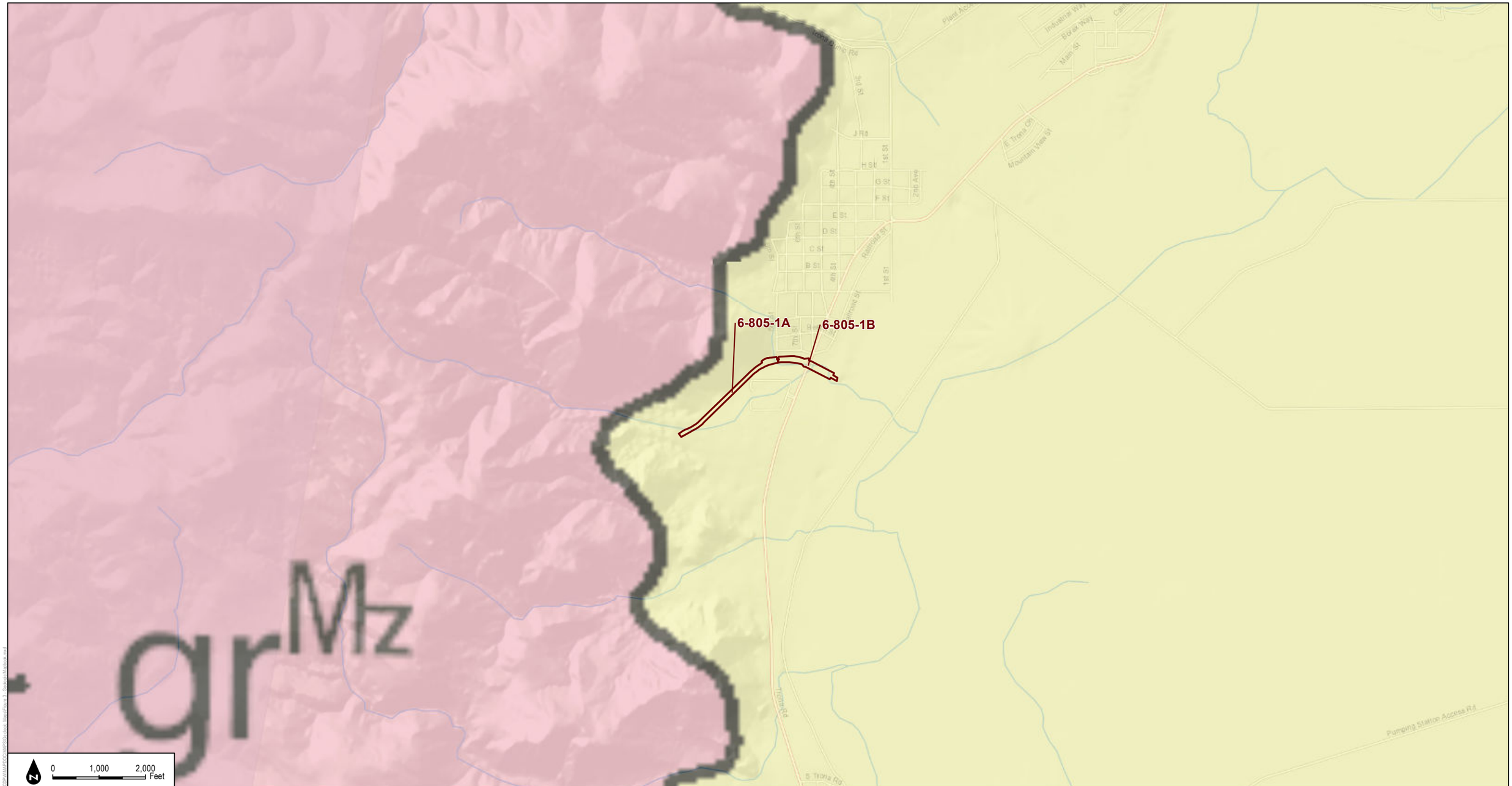
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

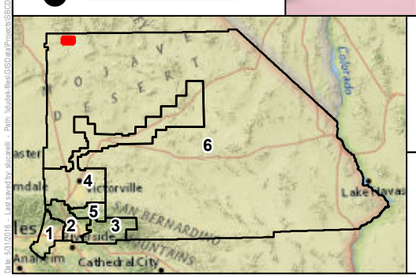
MAP 243

Zone 6 - Argus Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

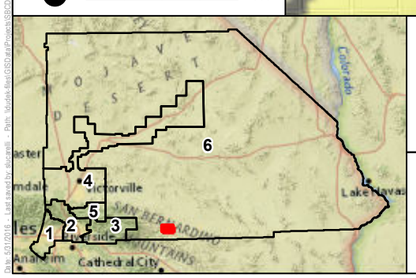
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 244

Zone 6 - Borosolvay Channel

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

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DUDEK

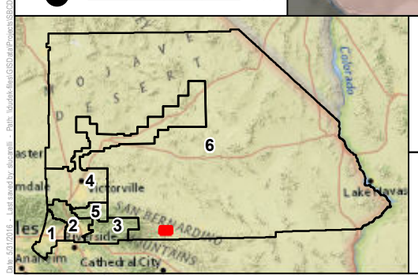
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 245

Zone 6 - Burnt Mountain Wash

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

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DUDEK

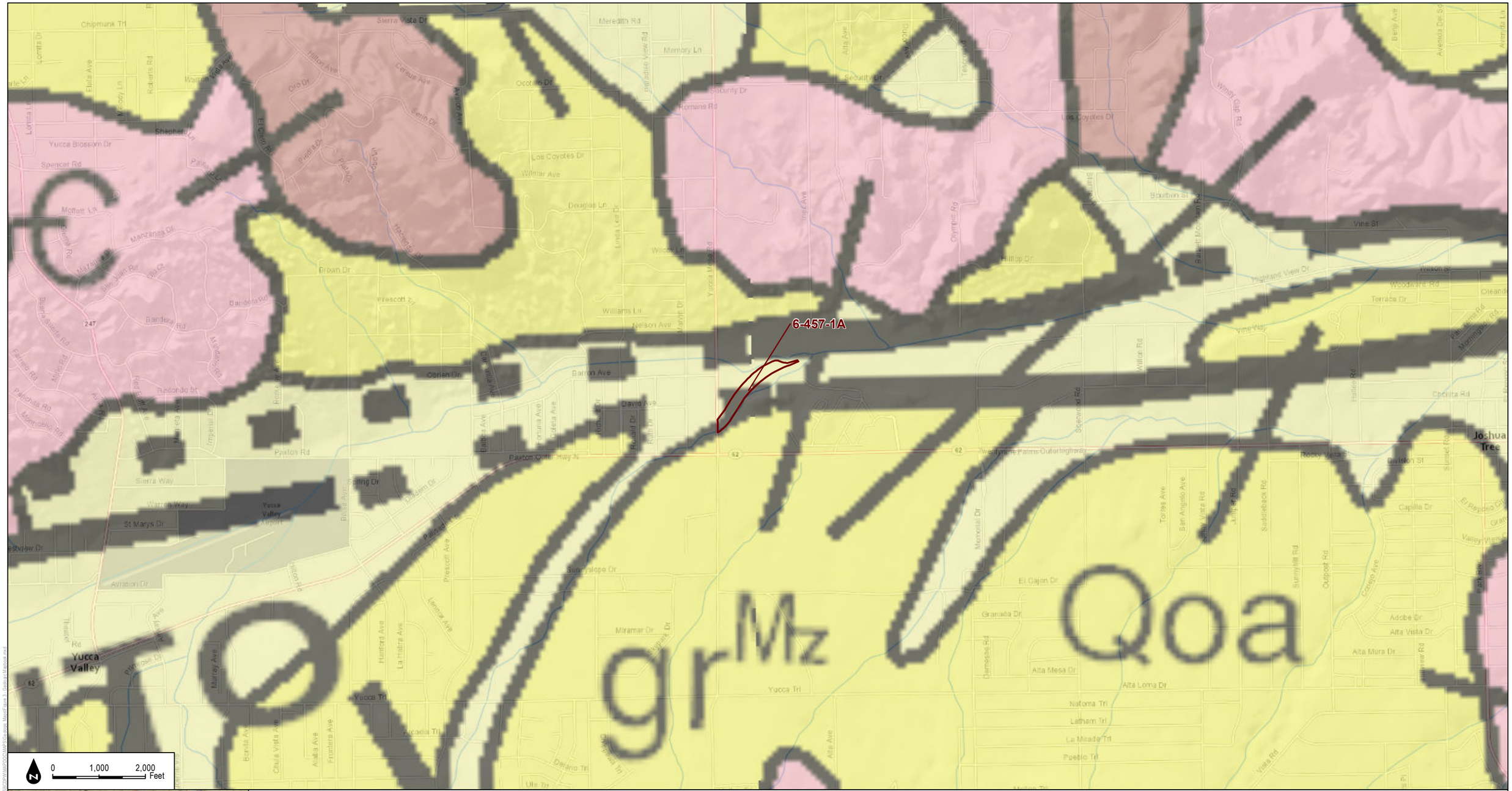
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

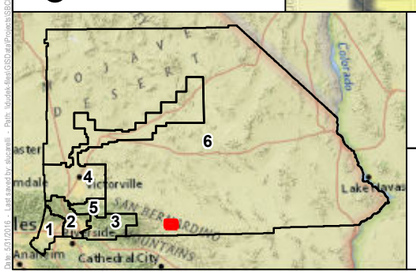
MAP 246

Zone 6 - Church Street Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

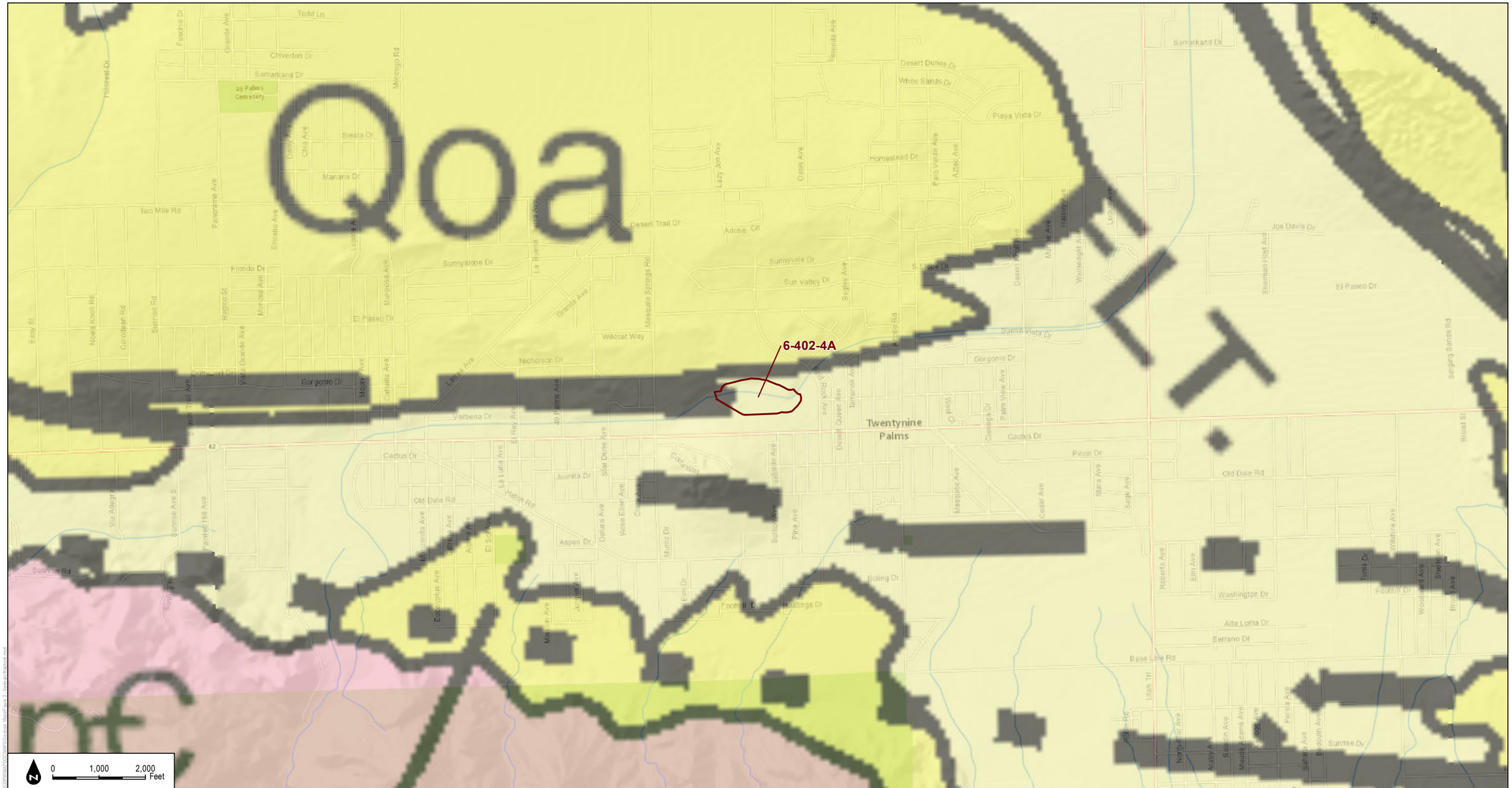
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

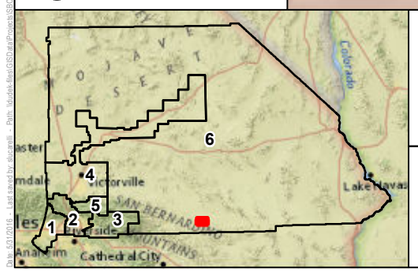
MAP 247

Zone 6 - Covington Wash Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

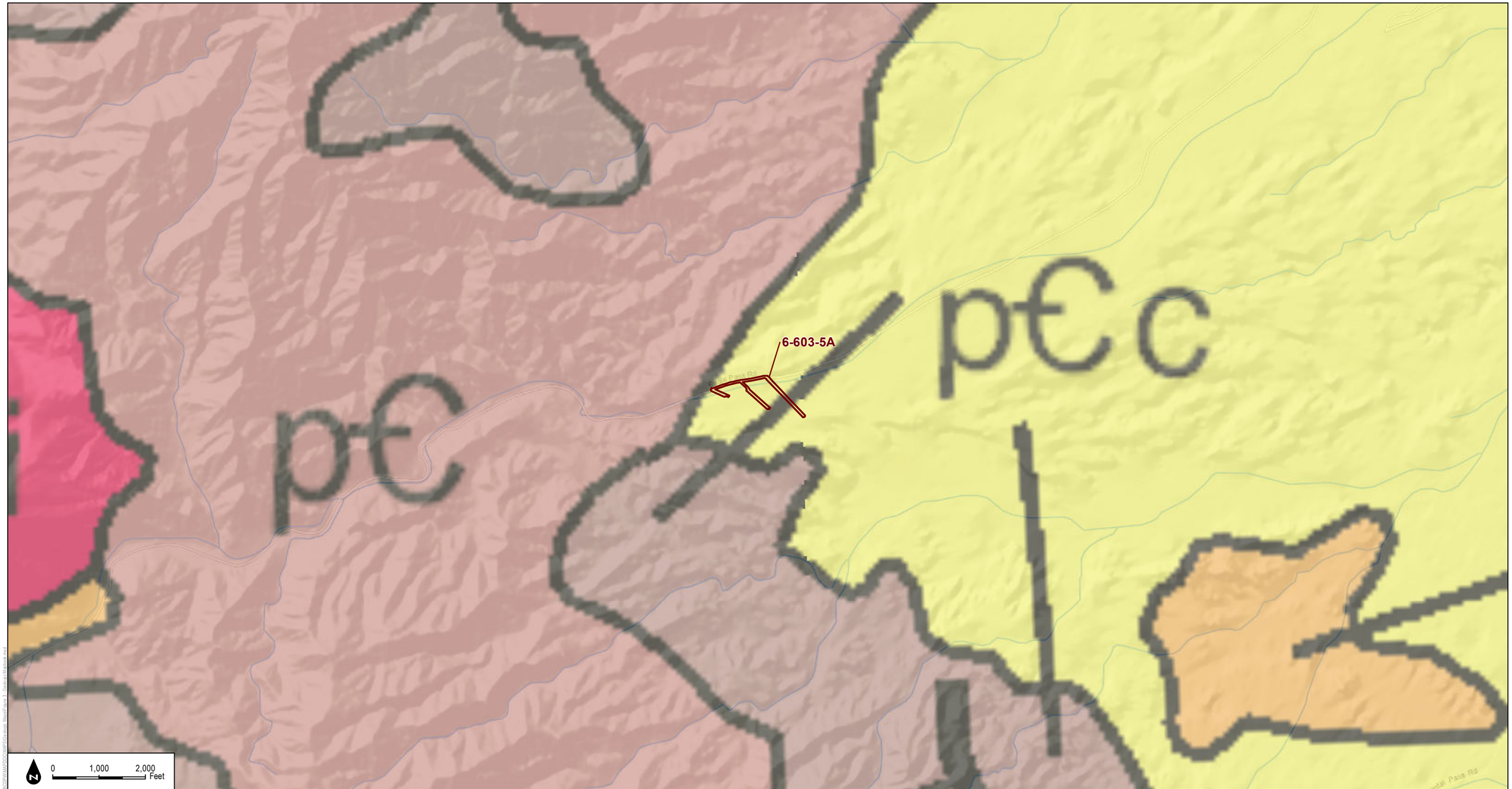
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

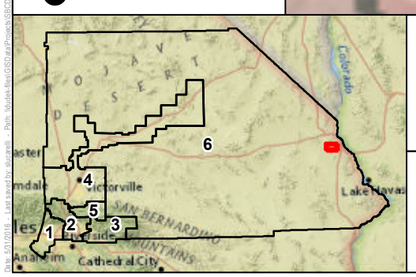
MAP 248

Zone 6 - Donnell Basin

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

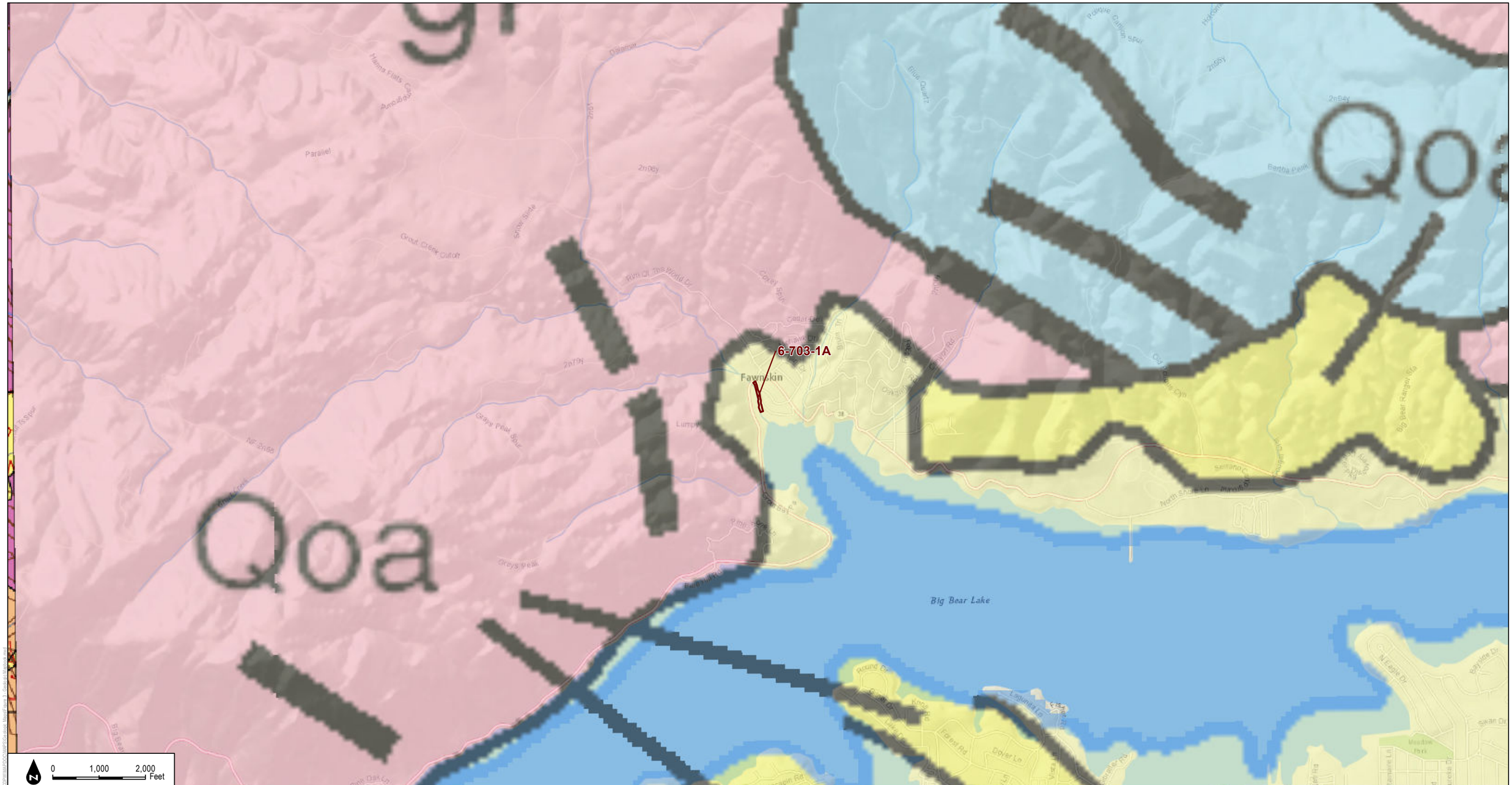
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

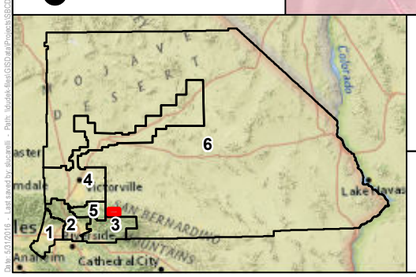
MAP 249

Zone 6 - Eagle Pass Levee, COE

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

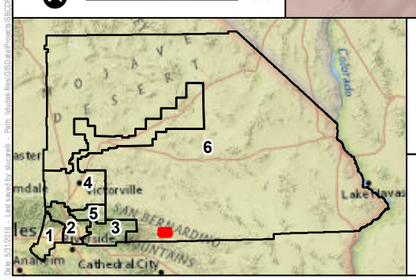
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 250

Zone 6 - Grout Creek

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

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DUDEK

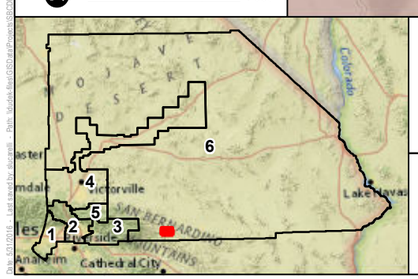
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 251

Zone 6 - High School Channel

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

1:24,000

DUDEK

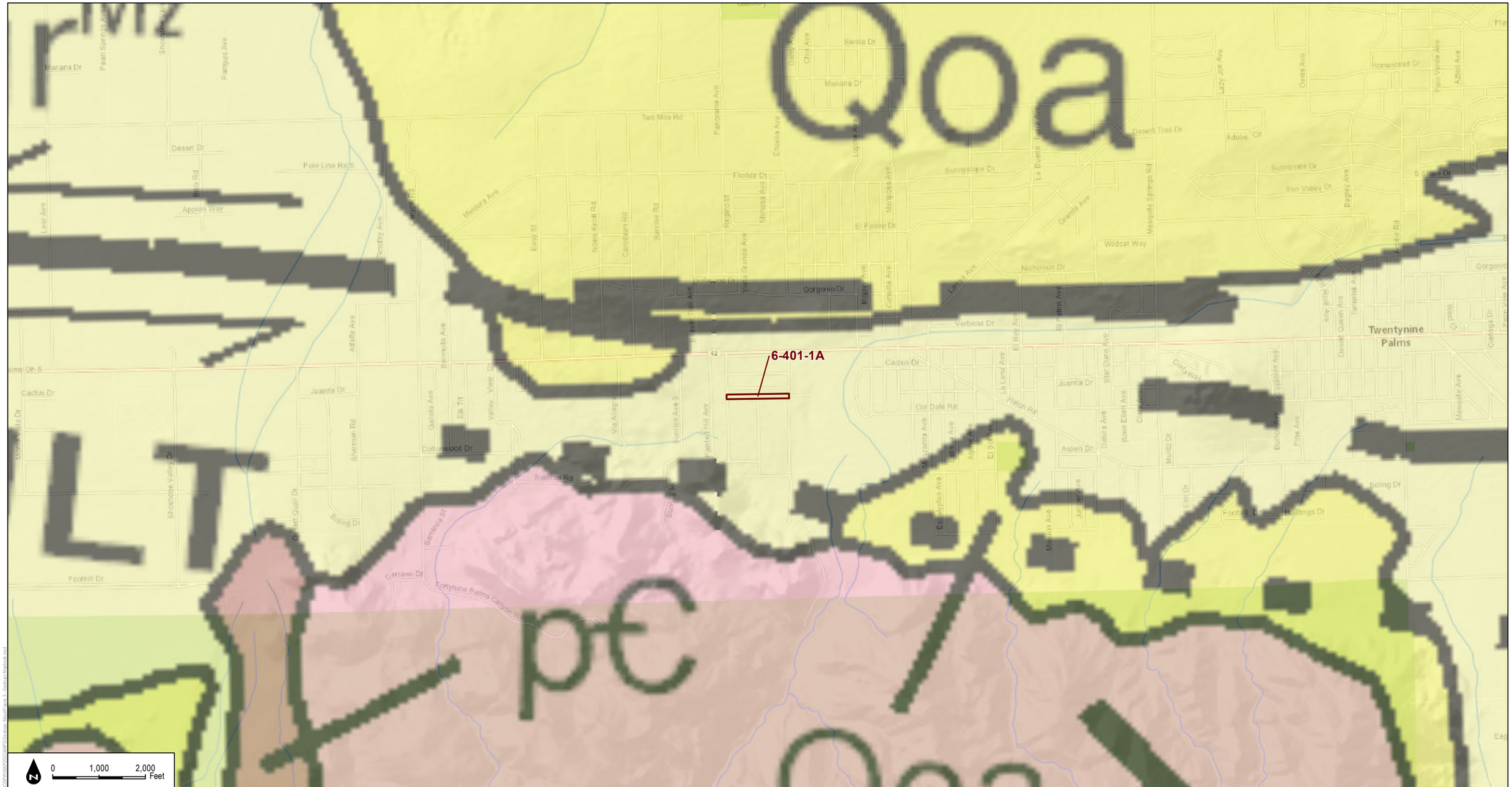
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

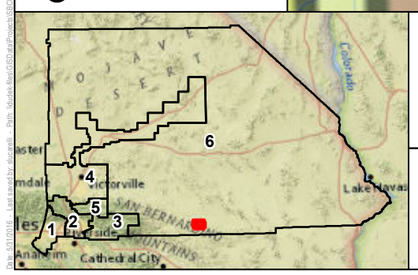
MAP 252

Zone 6 - Hospital Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

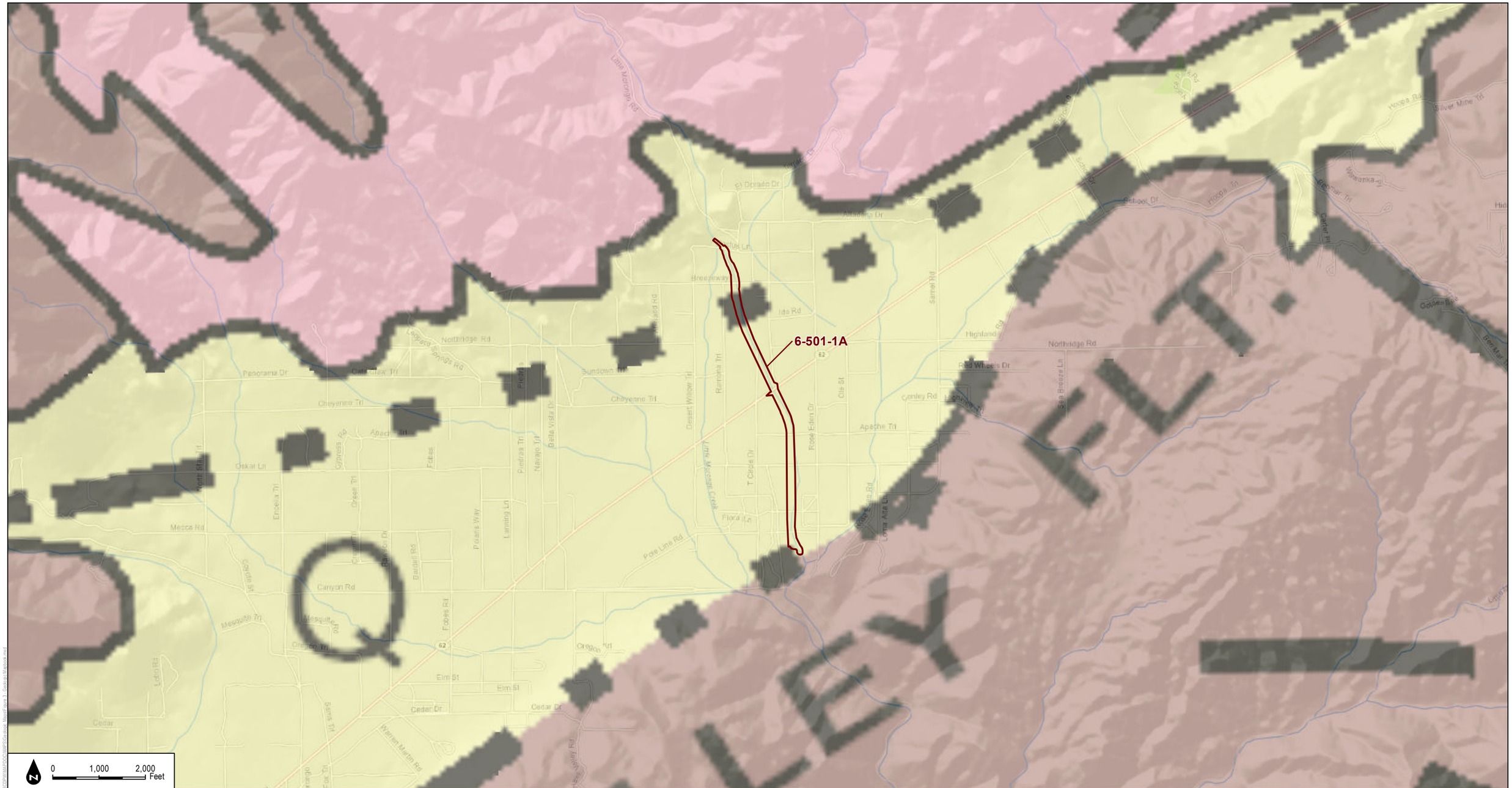
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

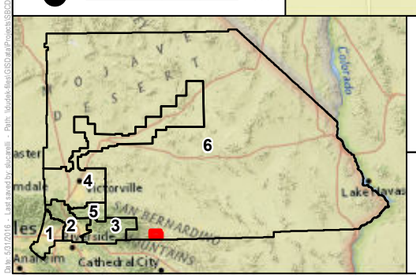
MAP 253

Zone 6 - Juanita Drainage Ditch

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

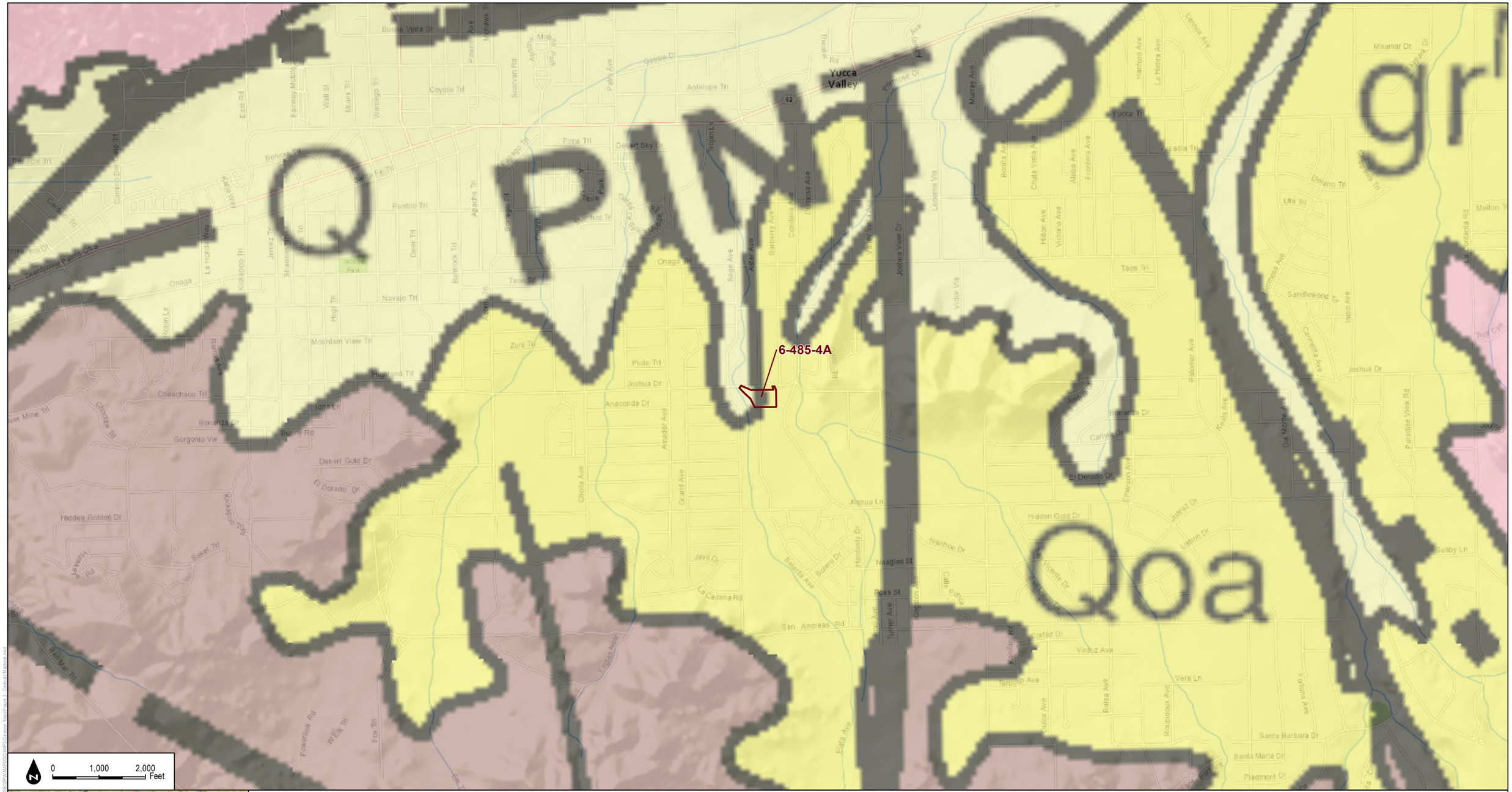
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

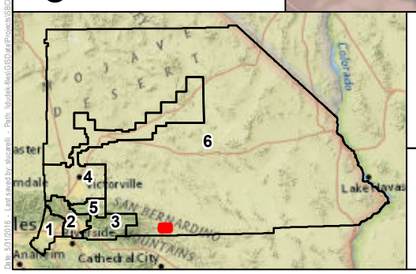
MAP 254

Zone 6 - Little Morongo Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

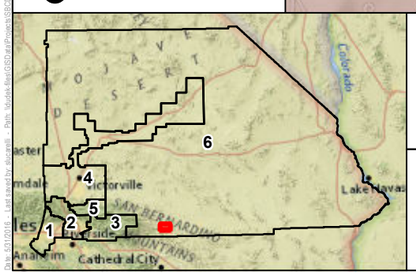
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 255

Zone 6 - Long Canyon Basin

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

1:24,000

DUDEK

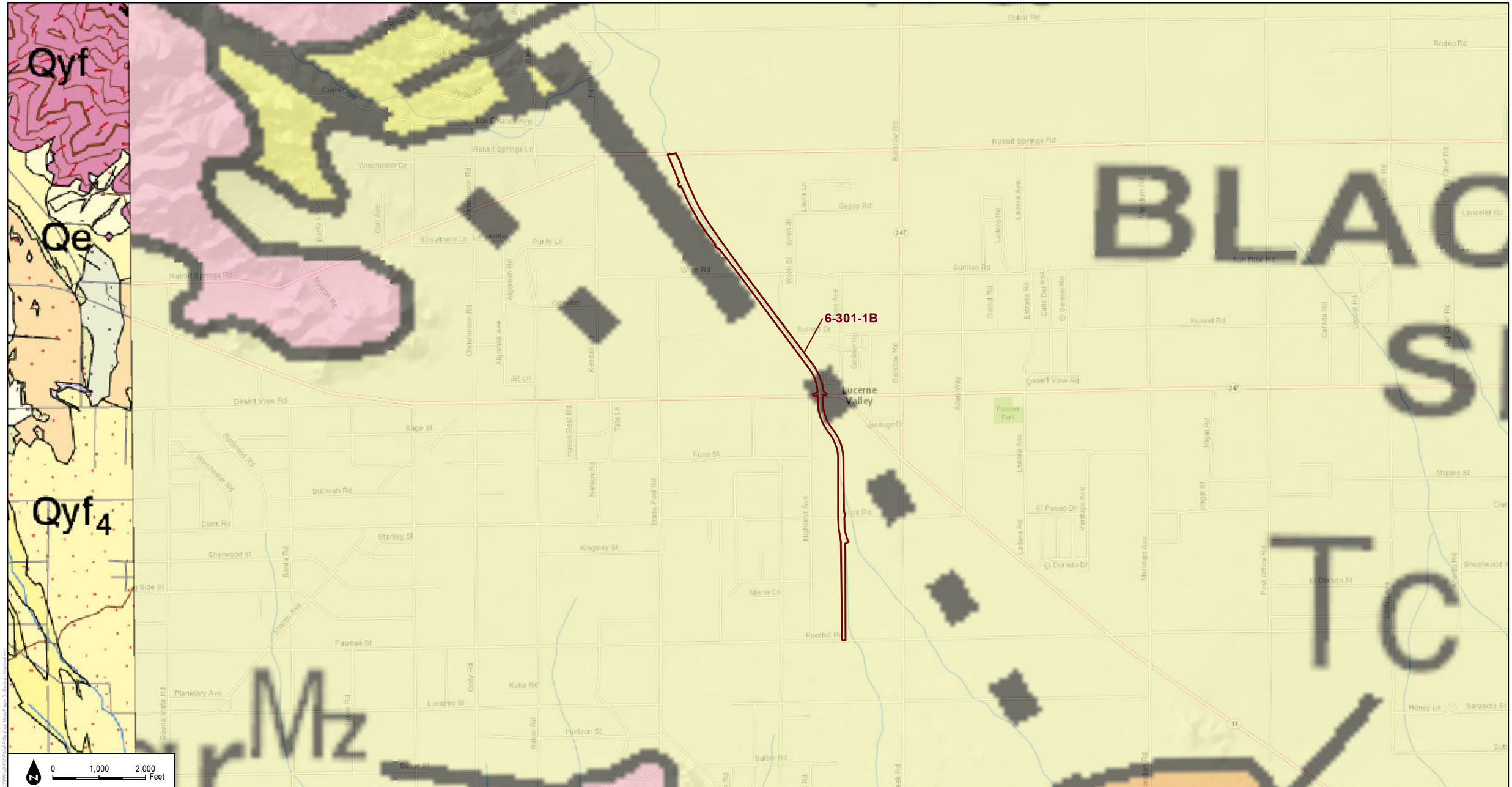
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

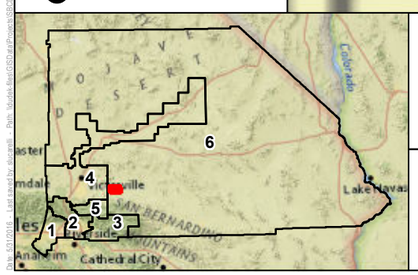
MAP 256

Zone 6 - Long Canyon Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

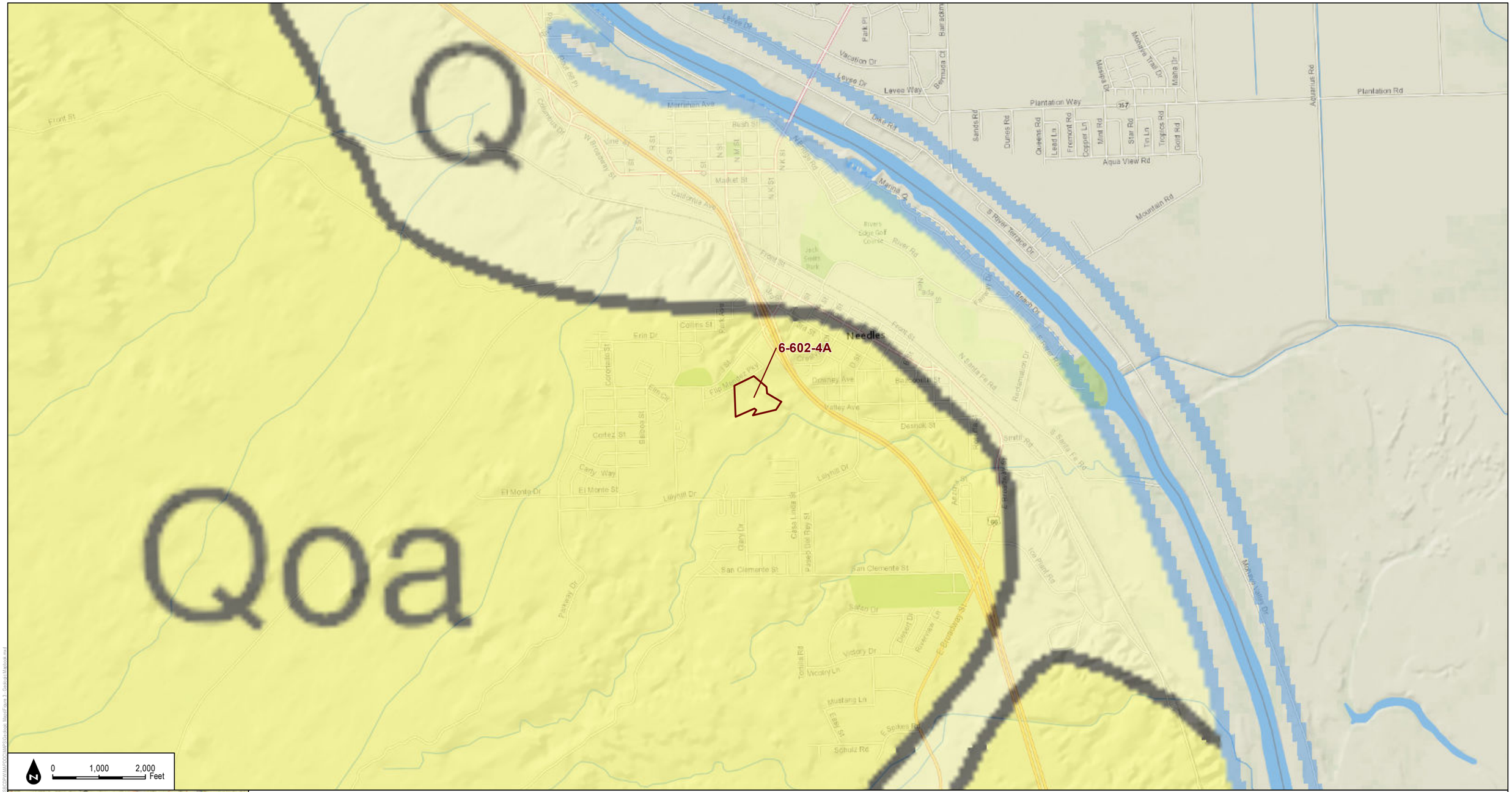
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 257

Zone 6 - Lucerne Valley Channel

San Bernardino Department of Public Works

Geologic Map



DUDEK

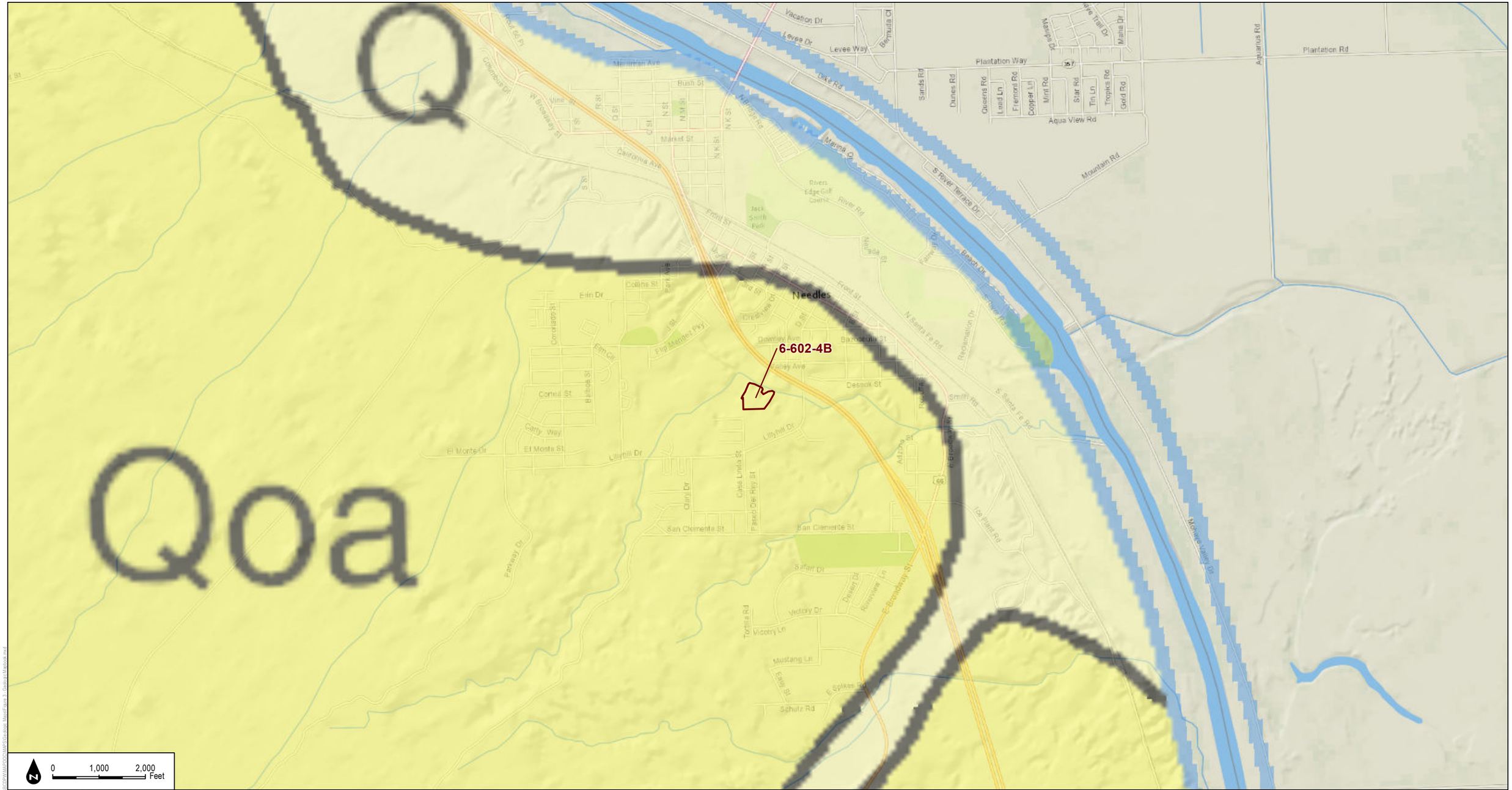
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 258

Zone 6 - Needles Basin #1

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

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DUDEK

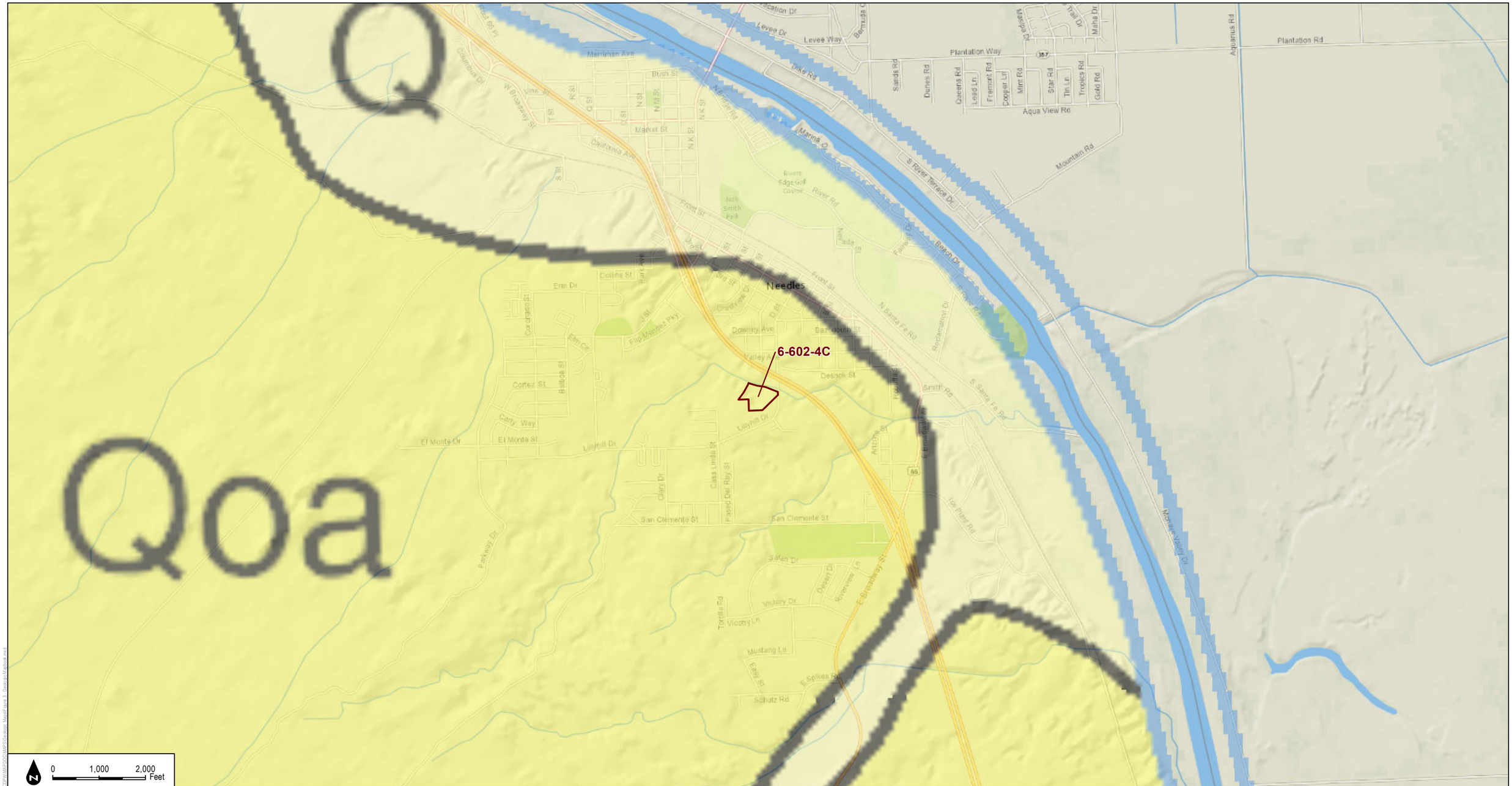
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

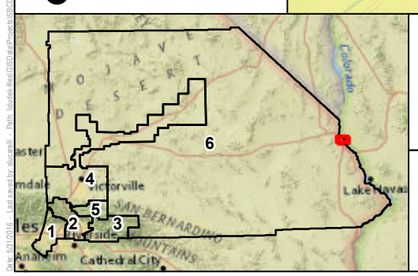
MAP 259

Zone 6 - Needles Basin #2

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

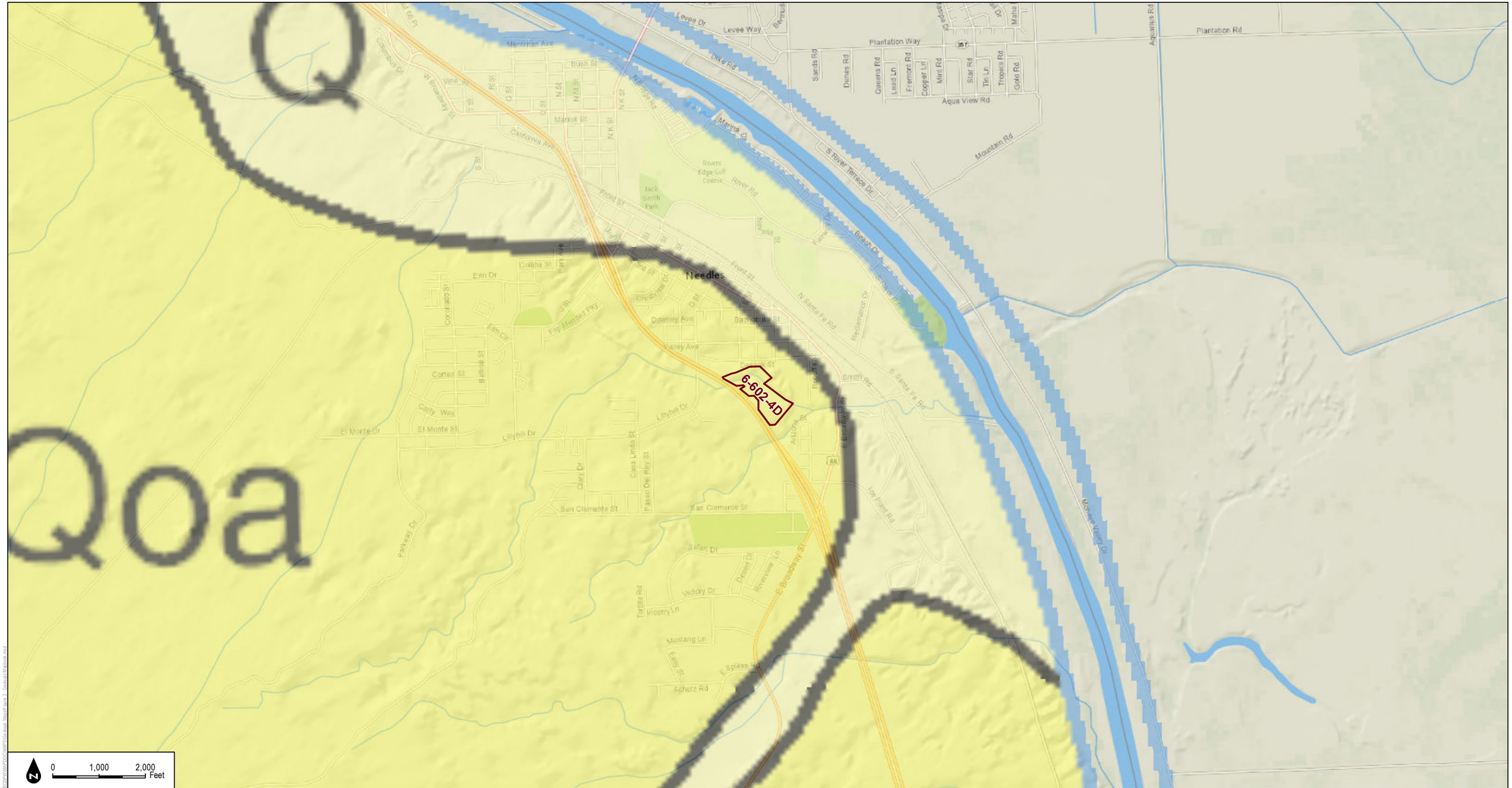
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

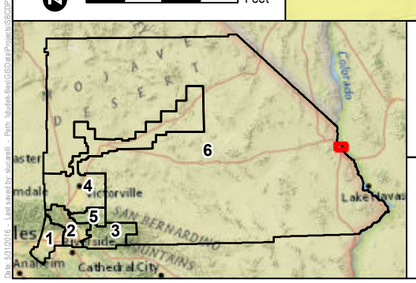
MAP 260

Zone 6 - Needles Basin #3

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

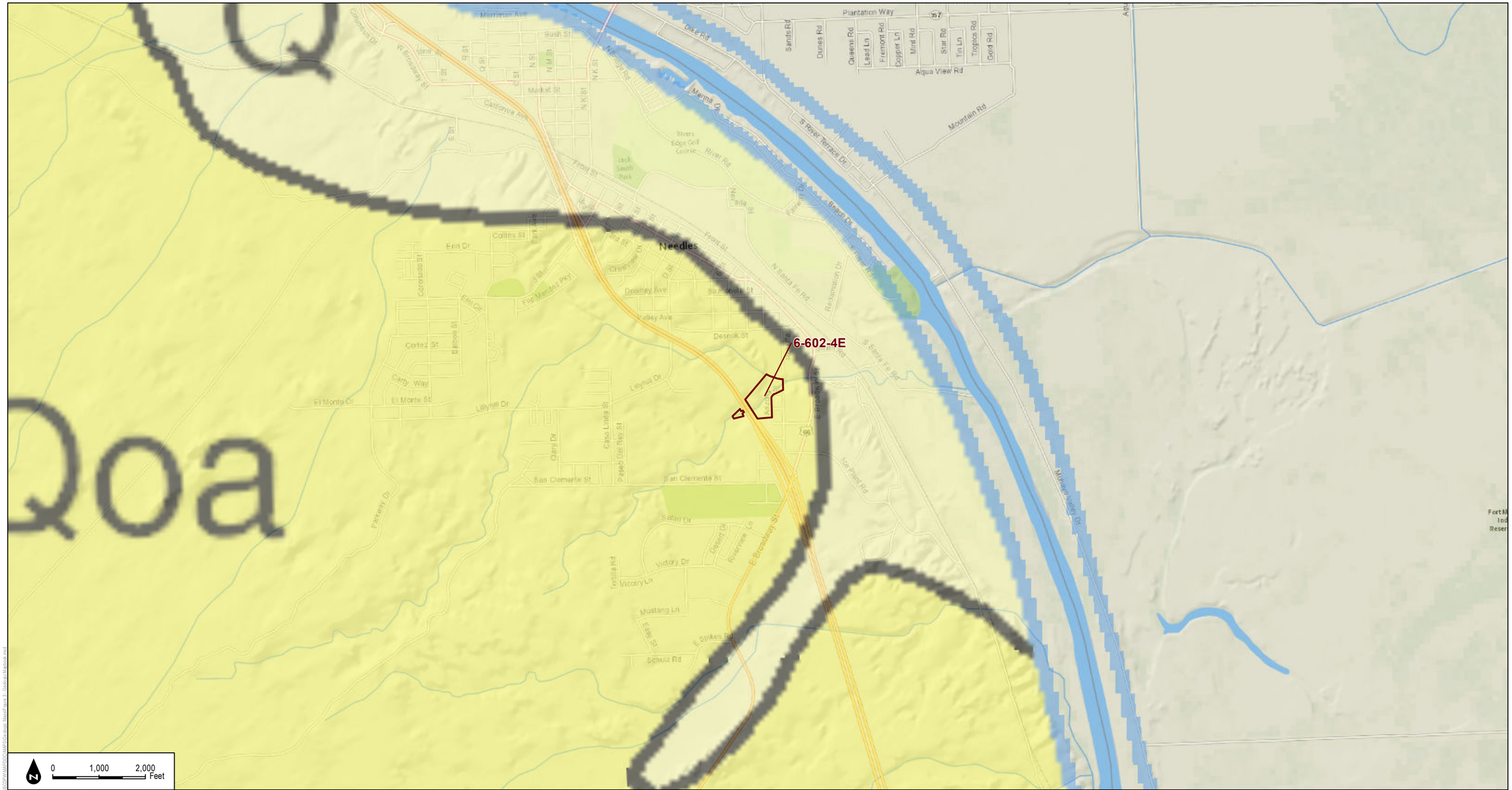
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

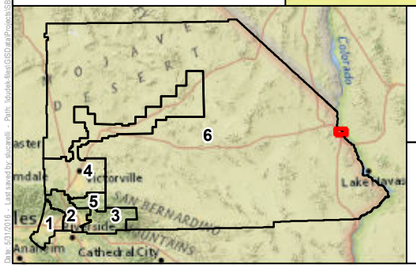
MAP 261

Zone 6 - Needles Basin #4

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

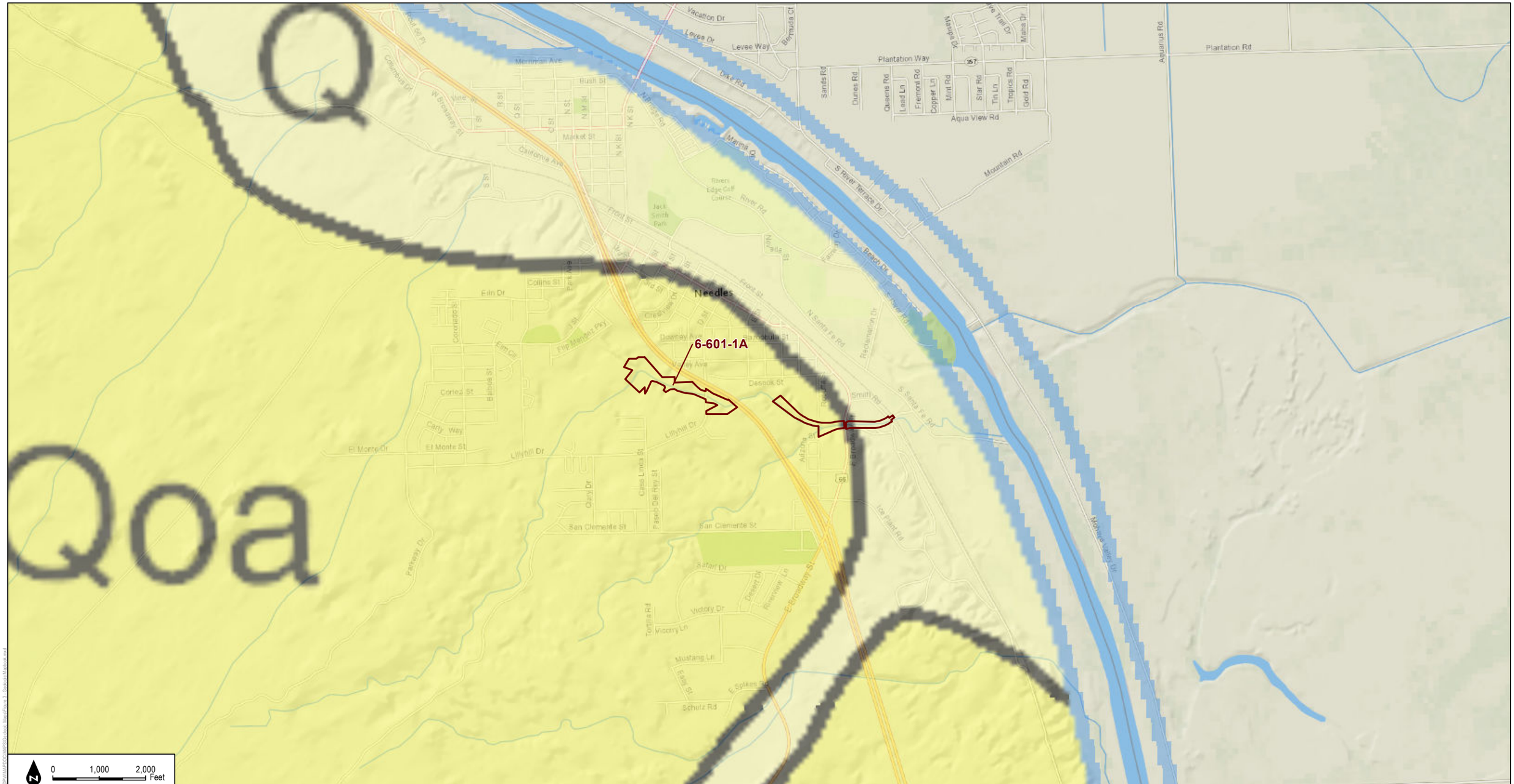
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

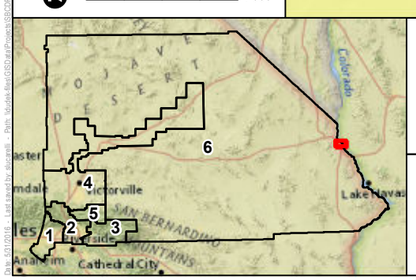
San Bernardino Department of Public Works

MAP 262

Zone 6 - Needles Basin #5

Geologic Map





Redbook Polygons

1:24,000

DUDEK

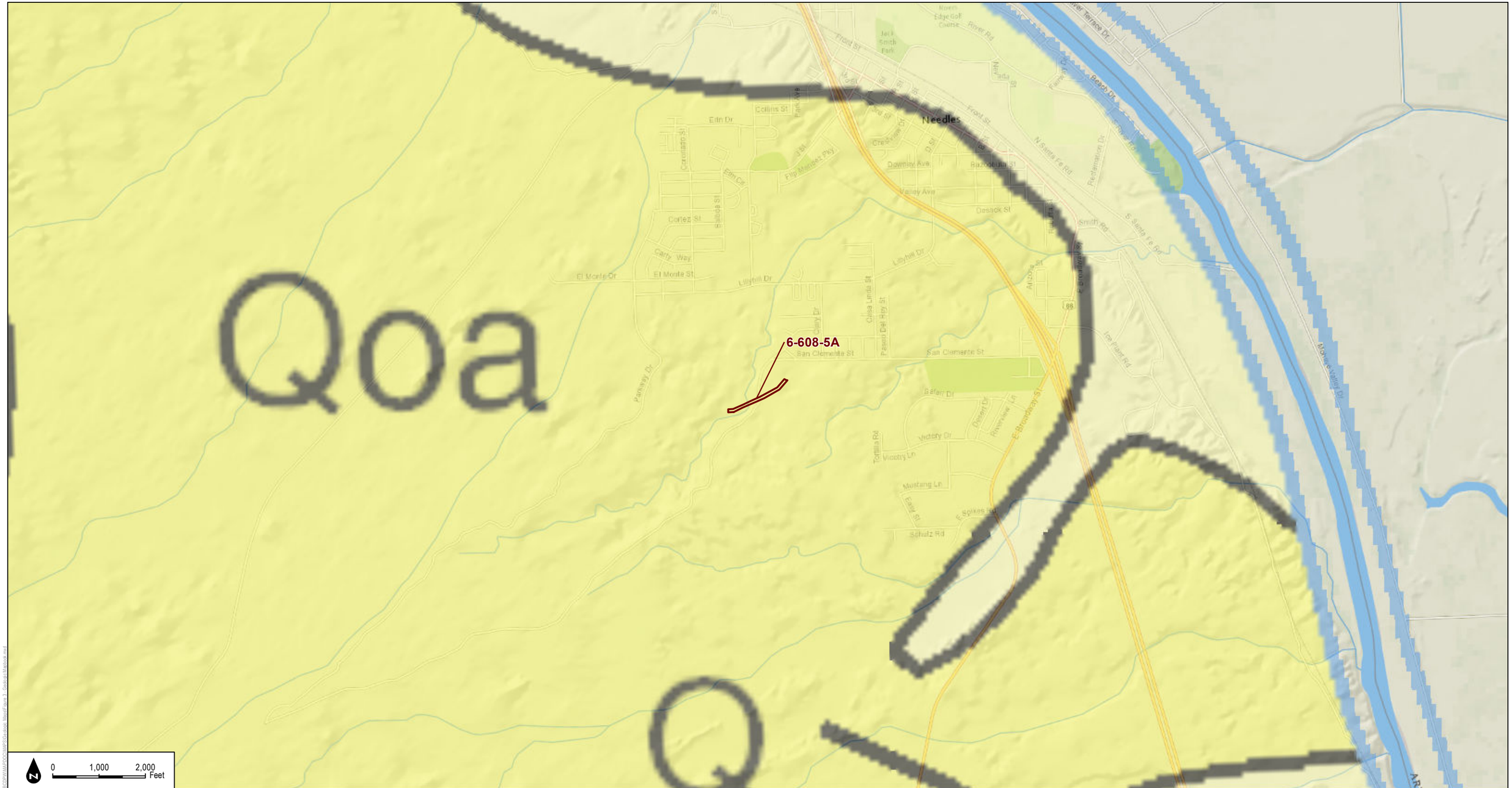
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

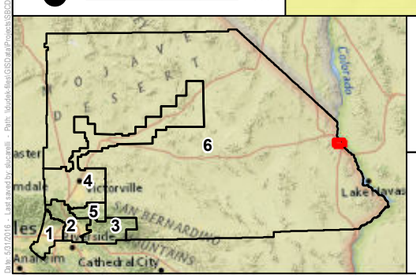
MAP 263

Zone 6 - Needles Flood Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

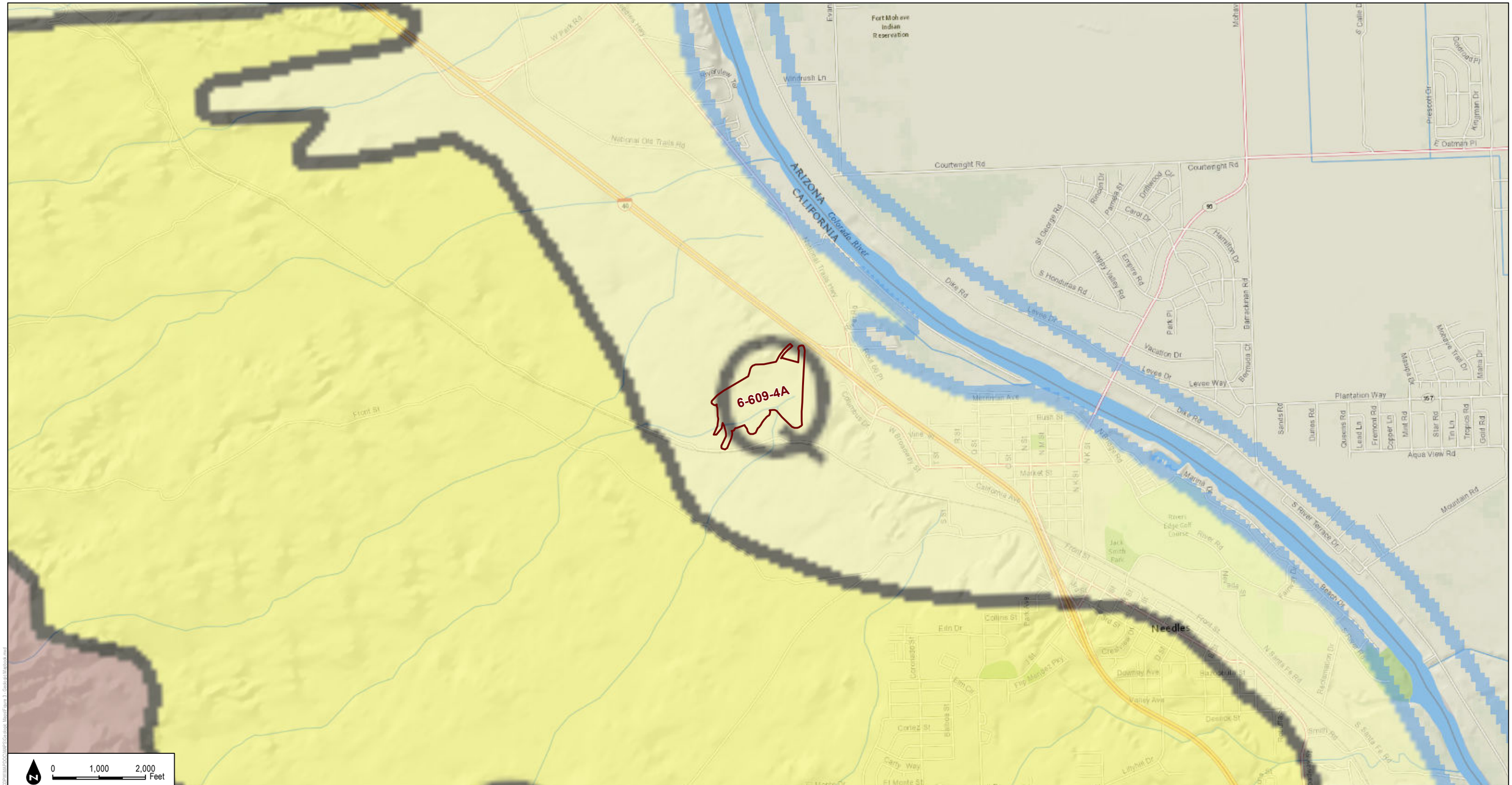
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

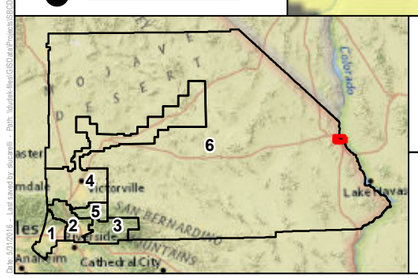
MAP 264

Zone 6 - Needles Riverview Levee

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

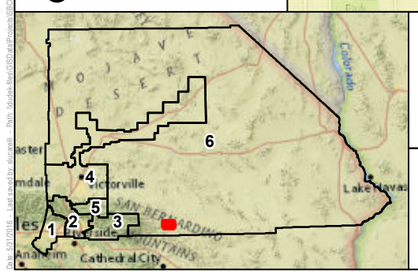
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 265

Zone 6 - North Needles Basin

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

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DUDEK

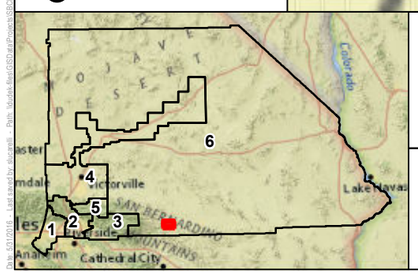
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 266

Zone 6 - Old Woman Springs Basin

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

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DUDEK

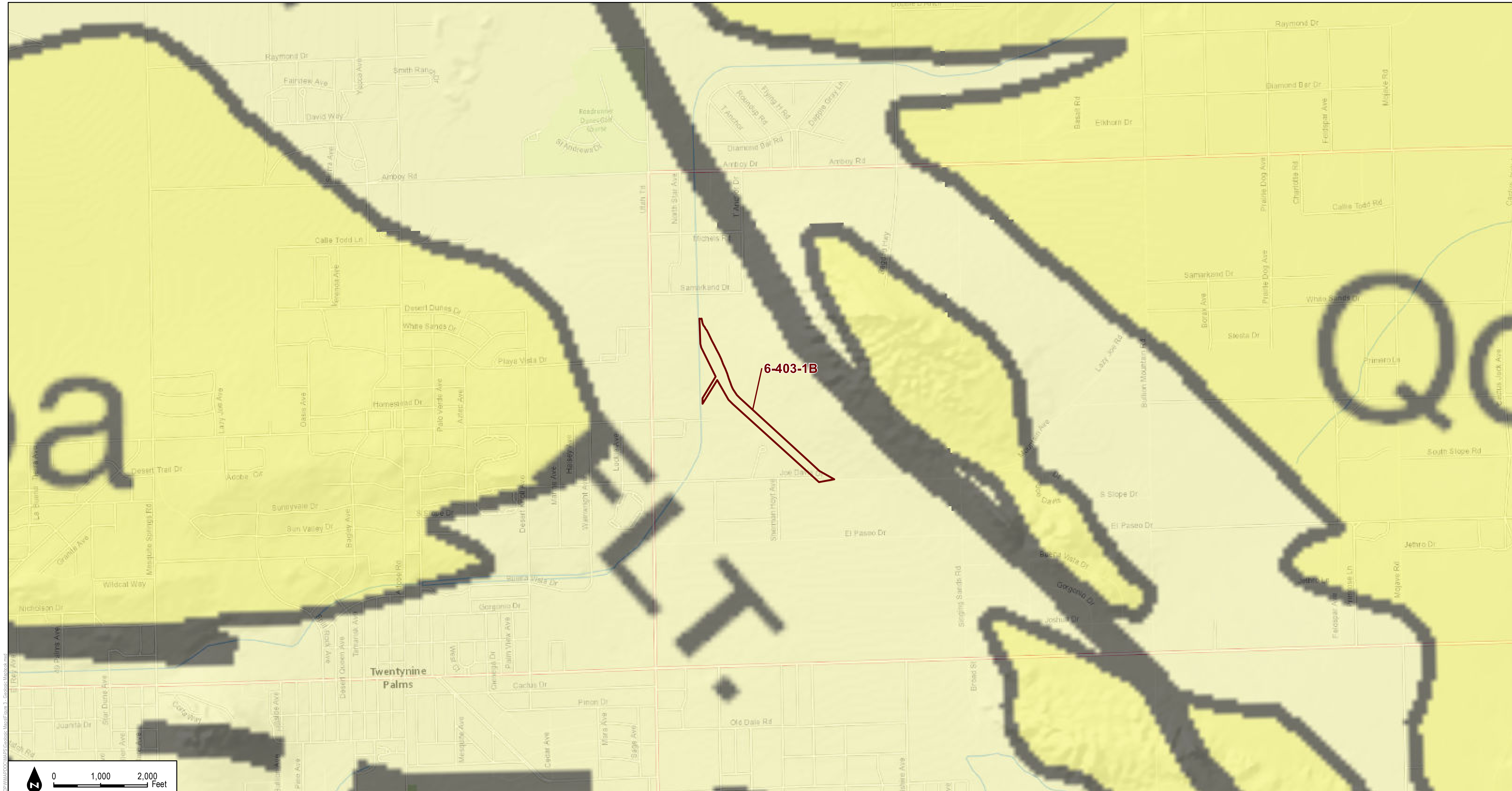
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

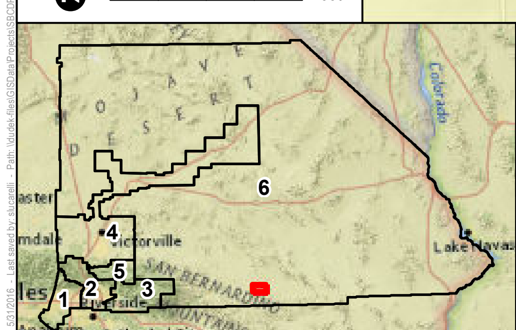
MAP 267

Zone 6 - Old Woman Springs Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

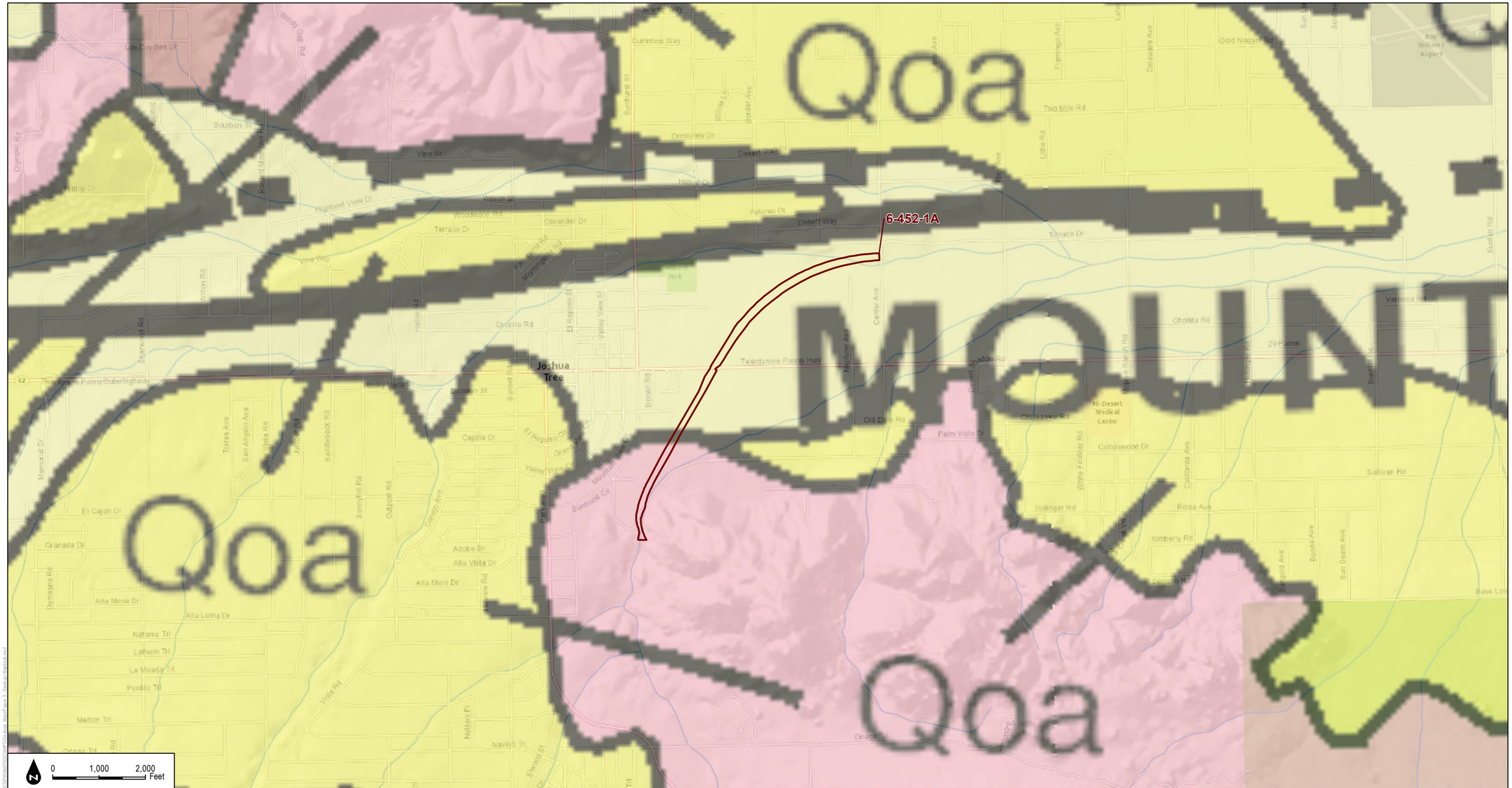
San Bernardino Department of Public Works

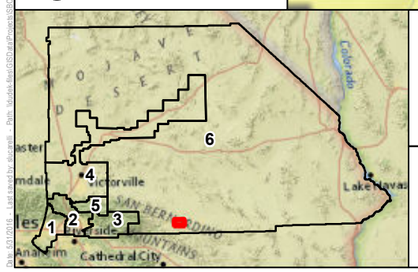
MAP 268

Zone 6 - Pinto Cove Creek

Geologic Map

Date: 5/31/2016 - Last saved by: slucarelli - Path: \\dudek-files\GIS\Data\Projects\SBCDPW\MAPDOC\MAPS\Geologic Maps\Figure 3 - Geologic Mapbook.mxd





Redbook Polygons

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DUDEK

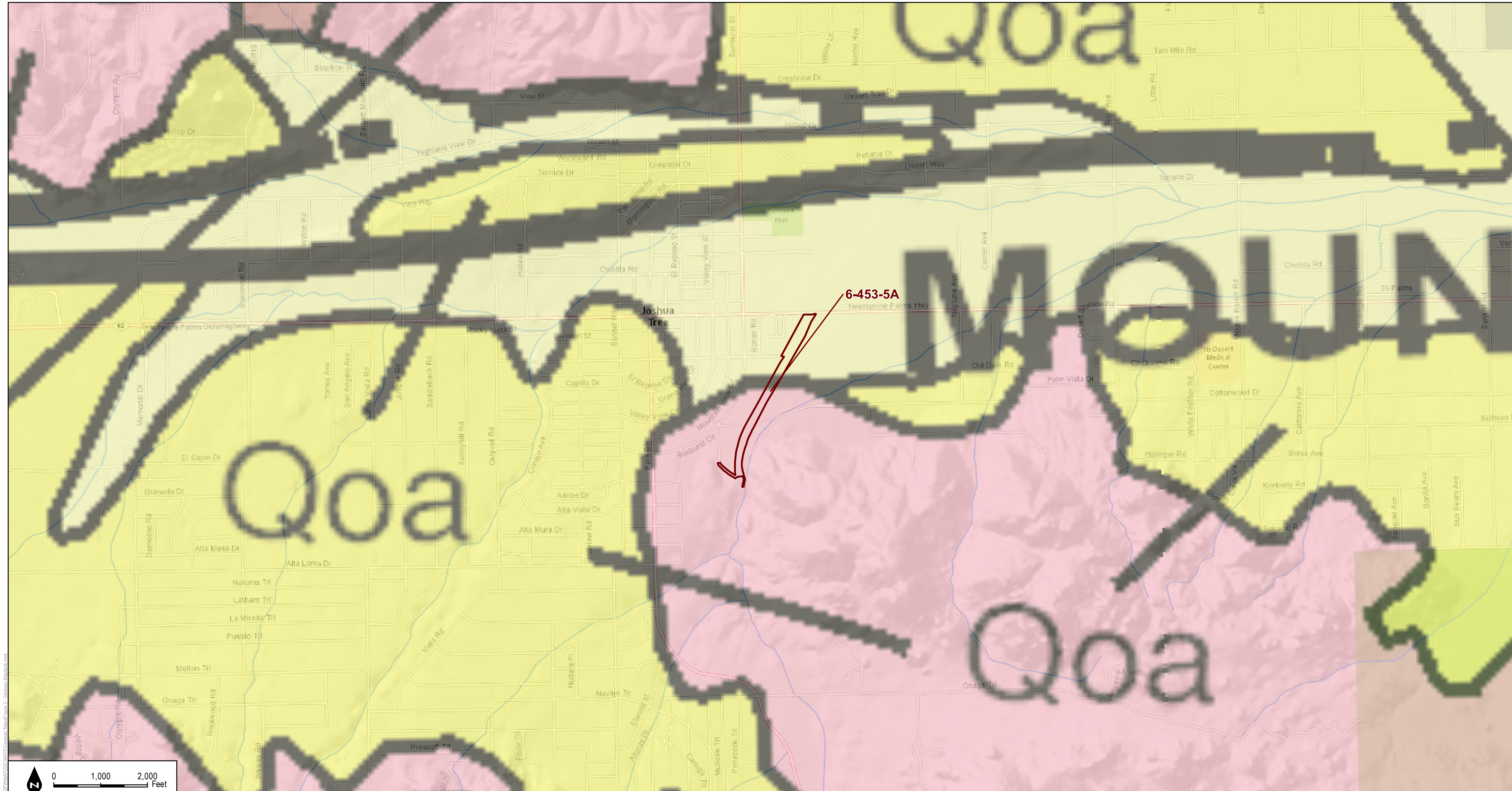
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

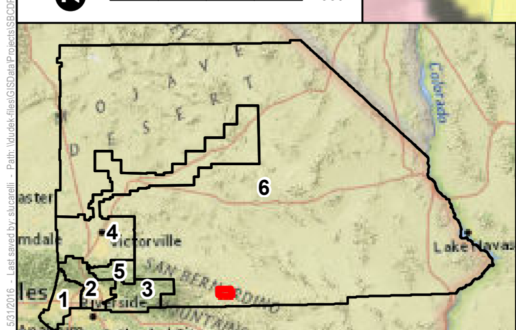
MAP 269

Zone 6 - Quail Wash

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

San Bernardino Department of Public Works

MAP 270

Zone 6 - Quail Wash Levee, COE

Geologic Map

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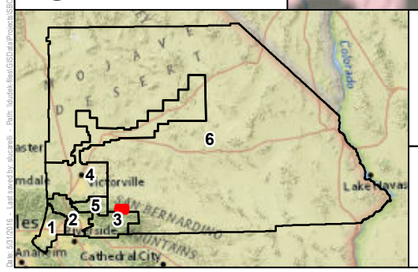

Redbook Polygons

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DUDEK

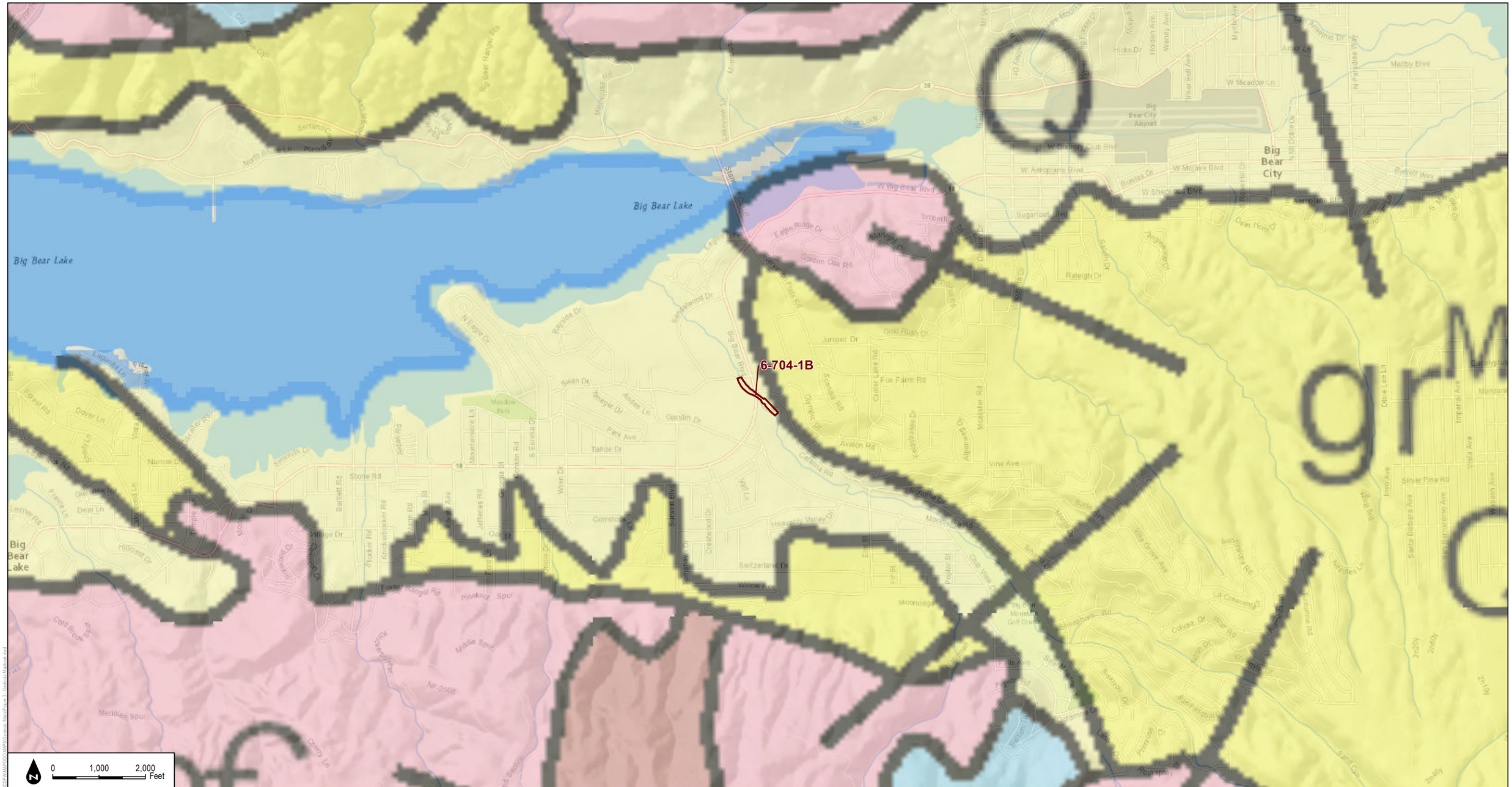
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

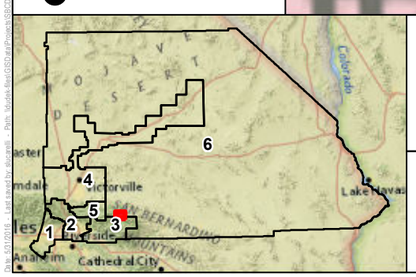
San Bernardino Department of Public Works

MAP 271

Zone 6 - Rathbone Creek

Geologic Map





Redbook Polygons

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DUDEK

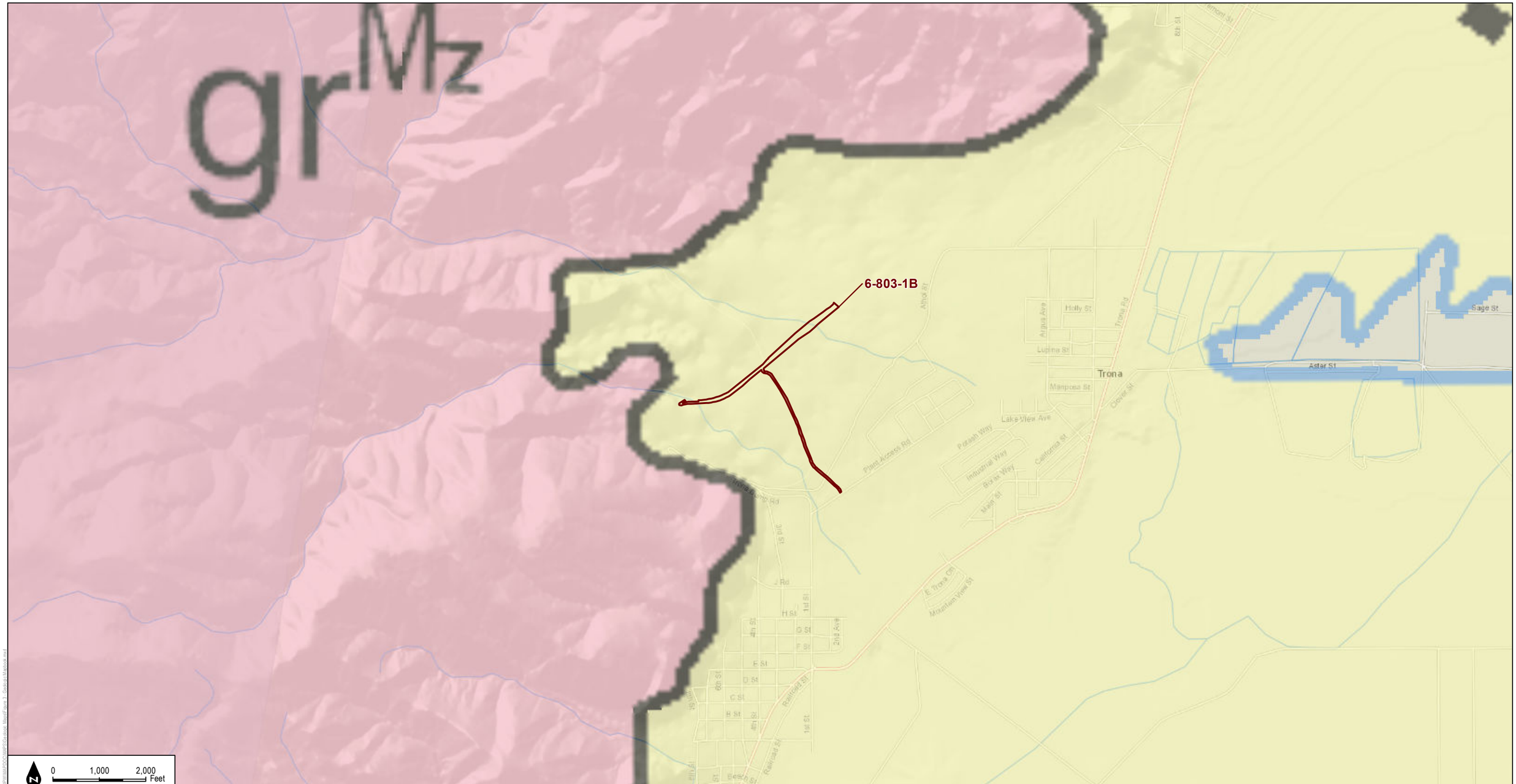
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

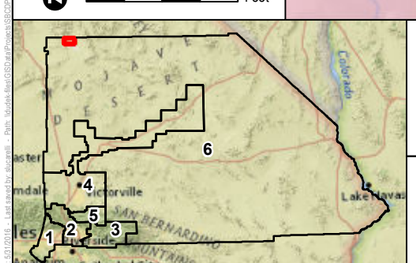
MAP 272

Zone 6 - Rathbone Creek (Rathbun Creek)

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

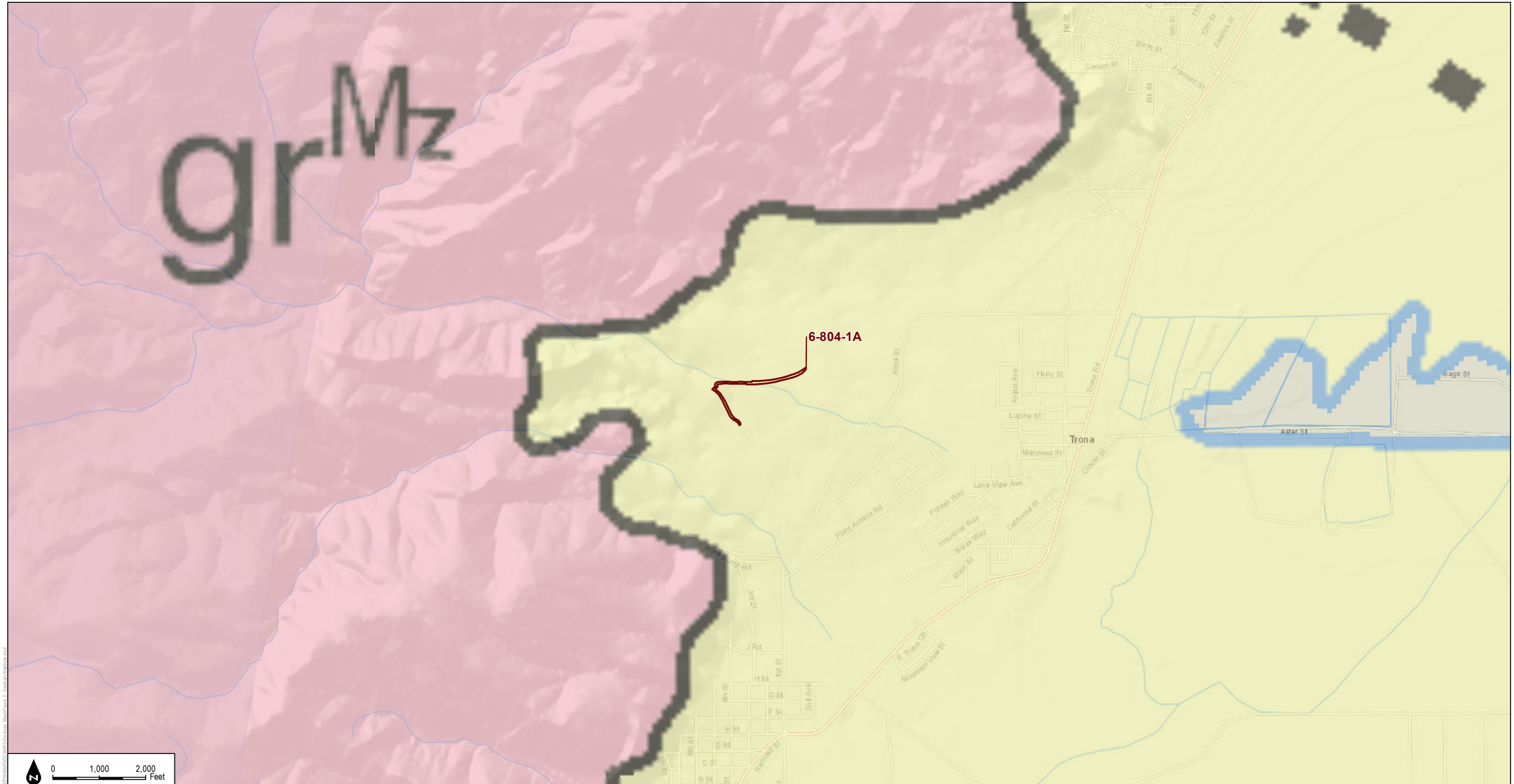
SOURCE: San Bernardino County Flood Control District, Diblee / California Geological Society

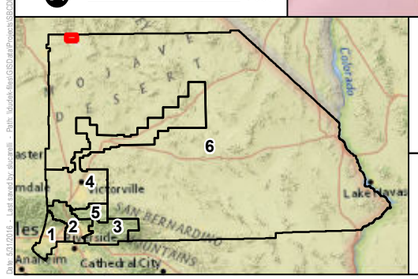
MAP 273

Zone 6 - Rockcrusher and Trona Flood Channels

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

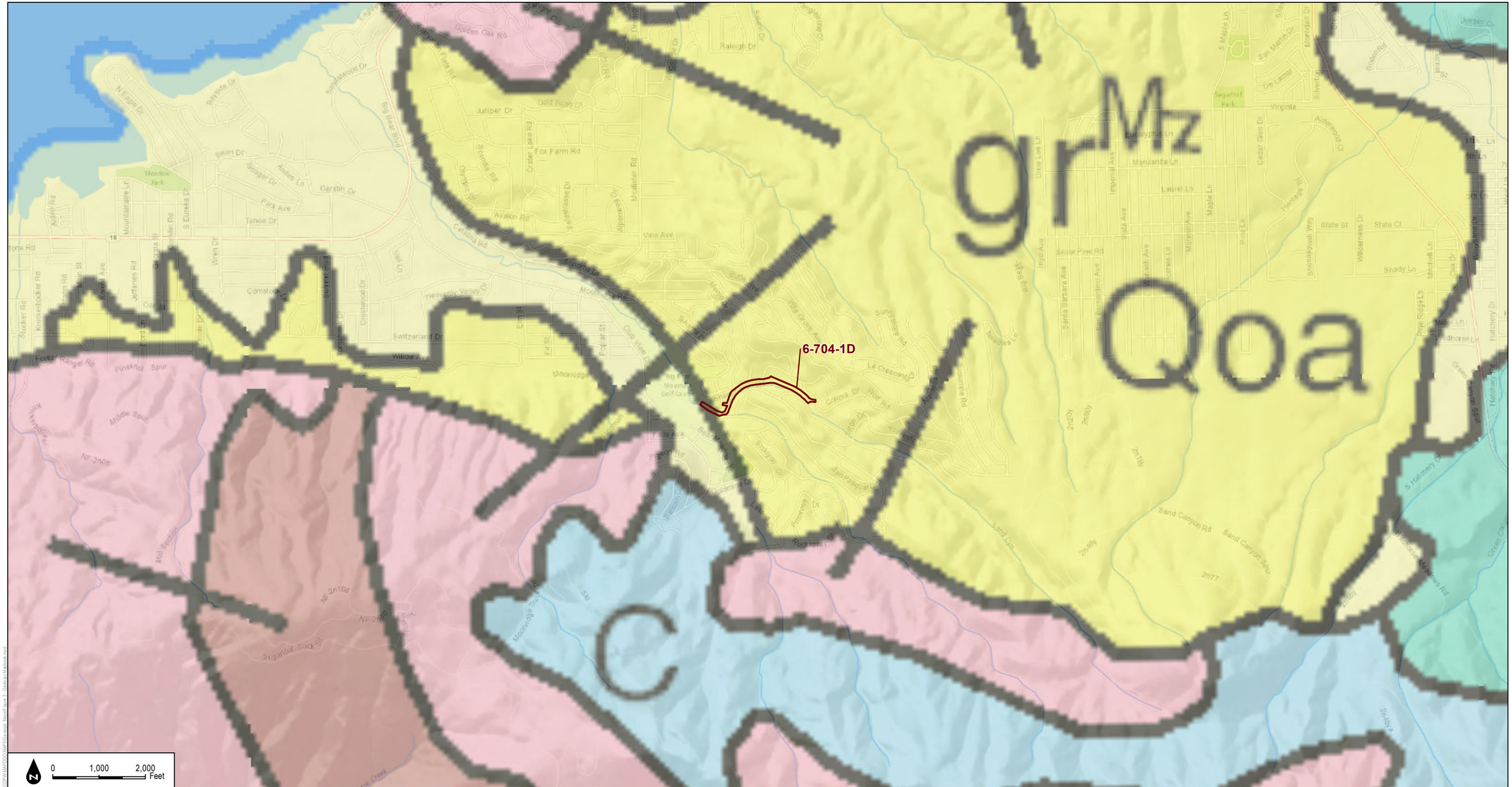
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

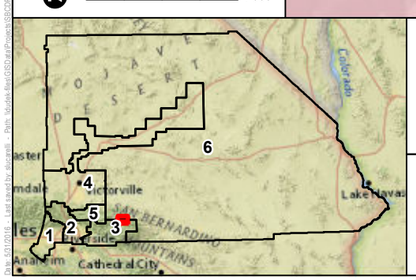
MAP 274

Zone 6 - Rockcrusher Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

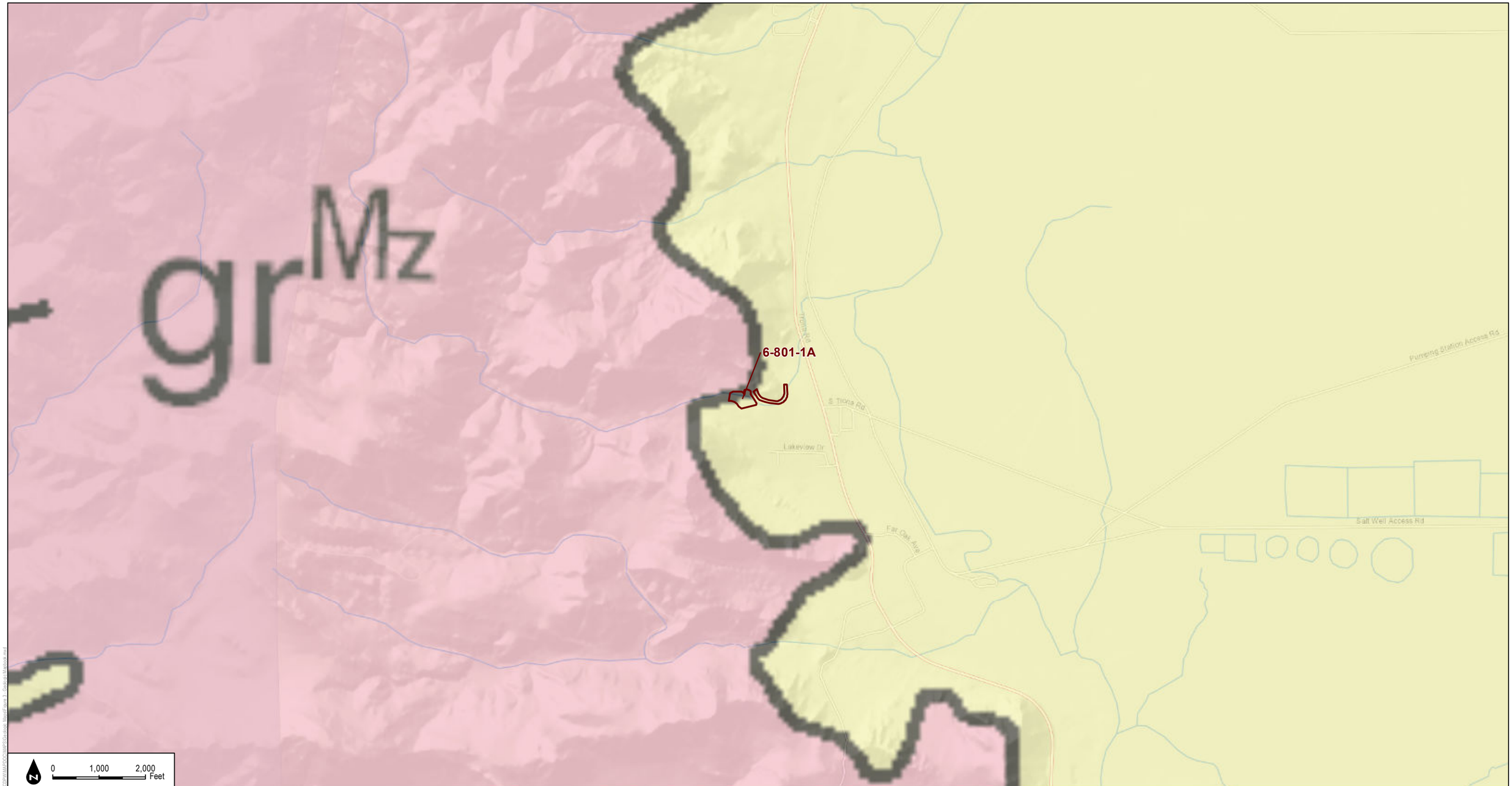
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

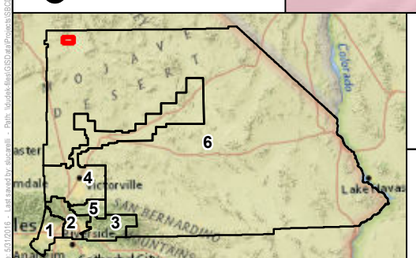
MAP 275

Zone 6 - Sand Canyon Creek

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

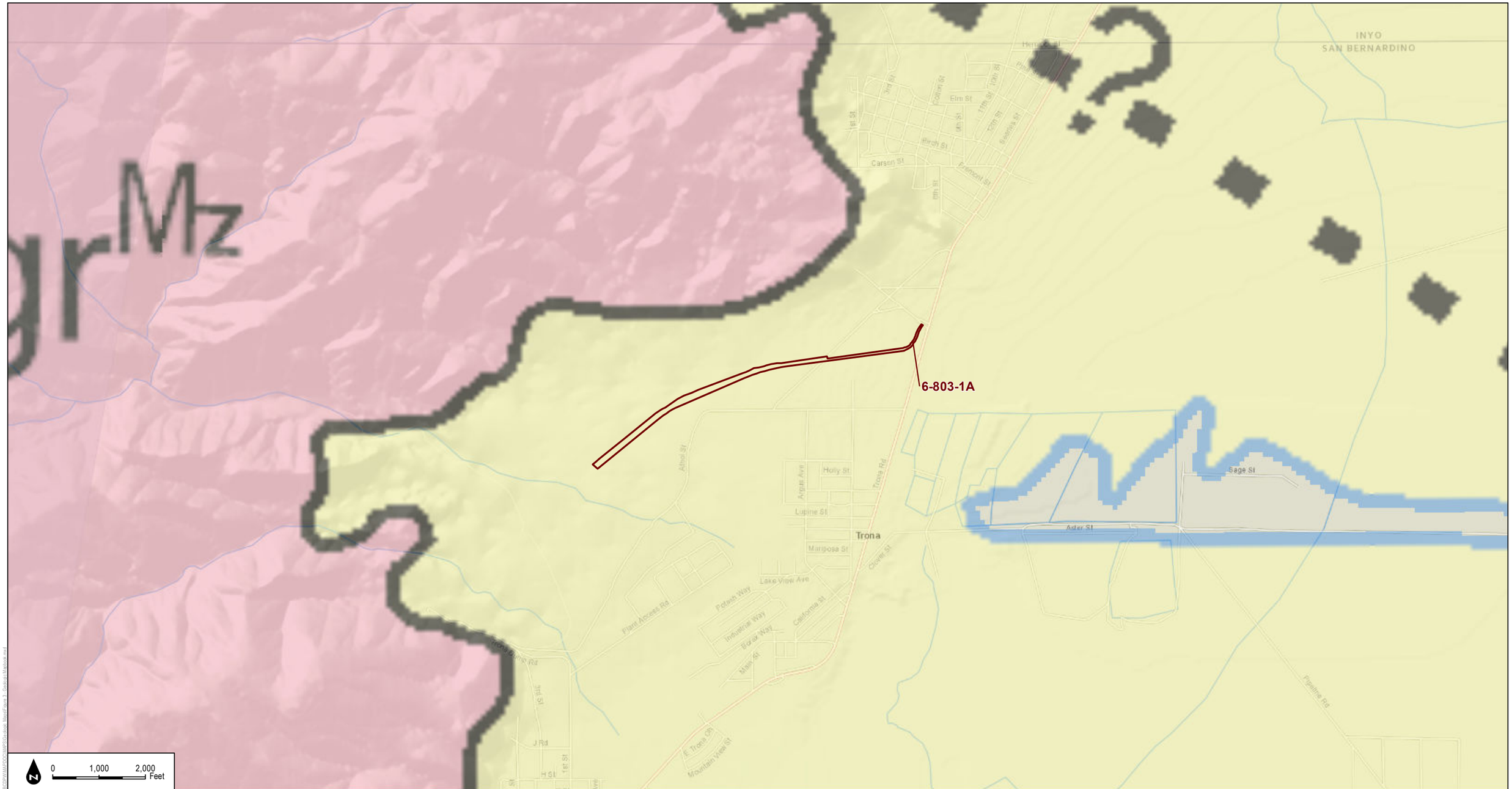
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

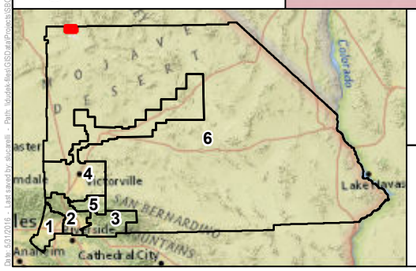
MAP 276

Zone 6 - South Trona Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

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DUDEK

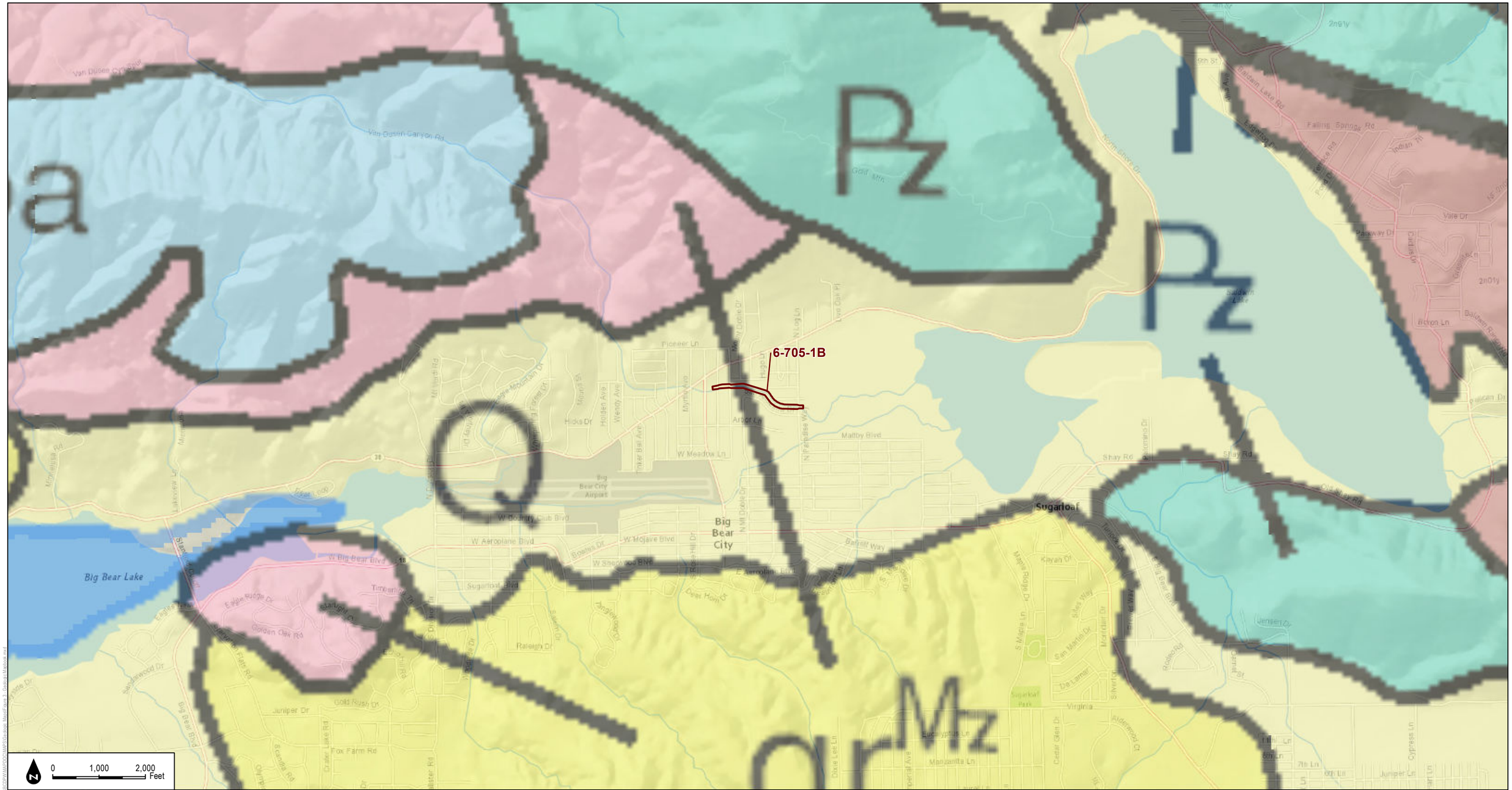
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

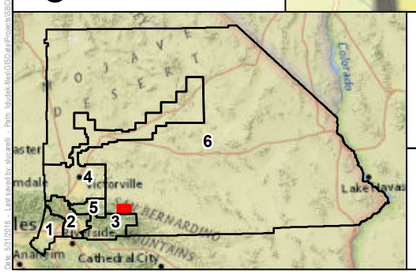
MAP 277

Zone 6 - Trona Flood Channel

San Bernardino Department of Public Works

Geologic Map





Redbook Polygons

1:24,000

DUDEK

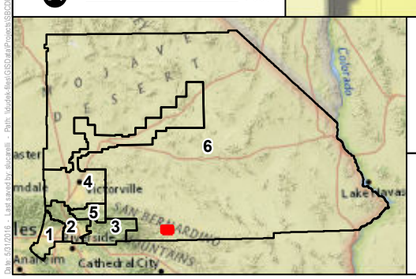
SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 278

Zone 6 - Van Dusen Creek (Low Flow)

San Bernardino Department of Public Works

Geologic Map



Redbook Polygons

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DUDEK

SOURCE: San Bernardino County Flood Control District, Dibllee / California Geological Society

MAP 279

Zone 6 - Yucca Creek

San Bernardino Department of Public Works

Geologic Map