SUNRISE POWERLINK
PALEONTOLOGICAL MONITORING AND DISCOVERY TREATMENT PLAN

Prepared for:

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Sunrise Powerlink
Paleontological Monitoring and Discovery Treatment Plan

Project Description

The Sunrise Powerlink (SRPL) Final Environmentally Superior Southern Route (FESSR), a 118-mile long 230 kV/500 kV transmission line that will traverse from San Diego Gas & Electric Company's (SDG&E) Imperial Valley Substation near El Centro, Imperial County, to SDG&E's Sycamore Canyon Substation near Interstate 15 in coastal San Diego County, was approved by the California Public Utilities Commission (CPUC) in December 2008 and by the USDI Bureau of Land Management (BLM) in January 2009. The approved SRPL primarily consists of new electric transmission lines between the Imperial Valley Substation and the western portion of SDG&E's service area in San Diego, as well as a new substation in central San Diego County, along with other system upgrades and modifications.

The SRPL FESSR is on public and private land. The project begins at the Sycamore Substation, which is near Interstate 15 and State Route 67. The line then turns south past San Vicente Reservoir, along the north side of El Monte Valley, and across the western end of El Capitan Reservoir. It crosses Interstate 8, where it will be constructed underground along Alpine Boulevard through Alpine until it turns south opposite Viejas Mountain. At this point, the route is south of Interstate 8, and it continues south to Barrett, running near State Route 94. Just beyond Barrett, again following State Route 94, the route goes east to Cameron, where it turns north to cross Interstate 8 just west of La Posta Reservation. The line will continue north, and then turn south before it reaches Ewiiaapaayp Reservation. It runs southeast through McCain Valley until it reaches Interstate 8; the line crosses Interstate 8 near the community of Boulevard and continues south to meet with the Southwest Powerlink. From this point, the line parallels the Southwest Powerlink as it follows Interstate 8 and continues north from Ocotillo. These lines swing south again just west of Plaster City, cross Interstate 8, and end at the Imperial Valley substation west of El Centro.

The SRPL FESSR crosses 23 California USGS 7.5-minute topographic quadrangles (Alpine, Barrett Lake, Cameron Corners, Carrizo Mountain, Coyote Wells, Descanso, El Cajon, El Cajon Mountain, In-Ko-Pah Gorge, Jacumba, Jacumba OE S, La Mesa, Live Oak Springs, Morena Reservoir, Mount Laguna, Mount Signal, Painted Gorge, Plaster City, Poway, San Vicente Reservoir, Sombrero Peak, Viejas Mountain, and Yuha Basin).

1.0. Introduction

Paleontological resources (i.e., fossils) are the remains and/or traces of prehistoric life older than approximately 11,000 years. Fossils are typically preserved in layered sedimentary rocks and the distribution of fossils is closely controlled by the distribution of these enclosing sedimentary rock units.

Construction related impacts that typically affect paleontological resources include mass excavation operations (e.g., grading of new access roads, tower pads, substations, and operations centers), drilling/borehole excavations (e.g., boreholes for direct embedded light and heavy duty steel poles, boreholes for heavy duty foundation poles, and drilling for micropile foundation poles), and trenching/tunneling (e.g., trenching for transmission line undergrounding, vaults, and laterals, and jack-and-bore tunneling for line undergrounding). Most, if not all of these construction techniques will be used during construction of the SRPL.

As discussed in the SRPL Paleontological Records Search (see Appendix) and summarized in Table 1, the distribution of paleontological resources along the proposed SRPL FESSR is not uniform, with paleontological resources of high potential located only along the extreme eastern (Segments 2 and 5) and western (Segments 17 and 18) portions of the FESSR. In addition, paleontological resources of unknown (undetermined) potential occur along portions of Segments 1 through 7, Segment 12, and Segments 16 through 18.

As proposed, all construction work which penetrates >5 feet below the ground surface in areas determined to have a high and/or moderate paleontological resource sensitivity will be monitored on a full-time basis by a qualified paleontological monitor. Any construction work in areas with exposed fossil-bearing sedimentary rock outcroppings (including along any reroutes) will be monitored on a full-time basis by a qualified paleontological monitor regardless of the depth of the proposed excavations. Construction work which penetrates >5 feet below the ground surface in areas determined to have a low, marginal, and/or undetermined paleontological resource sensitivity will be monitored on a part-time basis as determined by a qualified paleontologist. The areas of high and moderate sensitivity will be identified as Environmentally Sensitive Areas on the project construction drawings and the project proponent will be required to coordinate and oversee the successful initiation and completion of all required monitoring tasks.

Mitigation of these potential impacts can be reduced to a level below significance through implementation of the following Paleontological Monitoring and Treatment Plan (PMTP). This plan takes into consideration requirements of local public jurisdictions including the Bureau of Land Management (BLM), the U.S. Forest Service (USFS), the counties of San Diego and Imperial, and the cities of El Cajon and San Diego and is based on the requirements set forth in the Mitigation Monitoring, Compliance, and Reporting Program developed by the California Public Utilities Commission (CPUC) for this project. In addition, the PMTP incorporates guidelines set out in the revised Society of Vertebrate Paleontology (2010), Standard Procedures for Assessment and Mitigation of Adverse Impacts to Paleontological Resources.

2.0. Preconstruction

Prior to commencement of construction activities some or all of the following actions will be necessary.

2.1 Field Survey

Prior to ground disturbance in the areas of identified high and moderate paleontological sensitivity, a pre-construction survey will be completed by a qualified Paleontologist. The purpose of this survey is to field check the results of the SRPL paleontological records search, to evaluate the most current paleontological conditions in the area of proposed work, to determine any areas of particular concern or areas requiring special consideration, and to gather information to fine-tune this PMTP for specific project areas. This PMTP sets out the general structure, requirements, and methodology for mitigation of initial impacts to paleontological resources discussed in the SRPL Paleontological Records Search. Completion of the field survey will occur after acceptance of this PMTP by the CPUC, BLM, and USFS. Results of the pre-construction field survey are expected to provide additional details concerning these resources and their areal distribution. The closer to actual construction startup the survey is conducted the more accurate the final alignment and excavation designs will be and the more relevant will be the paleontological field determinations and proposed mitigation research designs. The areas to be targeted by the pre-construction field survey are summarized in Table 1 and include areas with the greatest resource potential (portions of Segments 2, 5, 17, and 18), as well as areas with more limited resource potential (portions of Segments 1, 3, 4, 6, 7, 12, and 16). It is important to note that growth of vegetative cover, surface weathering processes, soil formation processes, and deposition of modern colluvium and alluvium are on-going factors affecting accessibility to buried paleontological resources. Actual outcrops of fossil-bearing sedimentary rock units may be quite limited in a given area even though only minimal ground disturbance activities would create fresh, but temporary, exposures of these fossiliferous strata. Thus, the record search information combined with results of previous paleontological investigations and discoveries often provide a reliable picture of the location of significant paleontological resources.

2.2 Preconstruction Meeting

Prior to beginning any work that requires paleontological monitoring, a Preconstruction Meeting will be scheduled that will include the Consultant’s Principal Investigator/Paleontologist (PI), SDG&E environmental resources personnel, Construction Manager and/or Grading Contractor, Sunrise Powerlink construction personnel and crew, and agency or jurisdiction representatives. The qualified PI shall attend any grading-related Preconstruction Meetings to provide comments and/or suggestions concerning the paleontological monitoring program to the project’s Construction Manager. A tailgate meeting may replace the Preconstruction Meeting. The PI or qualified paleontological monitor will attend any tailgate meeting to brief the construction crew on paleontological monitoring protocols.

2.3 Areas to be Monitored

Based on the preliminary findings of the SRPL Paleontological Records Search and on the specific results of the pre-construction field survey the PI shall annotate construction plans to show Environmentally Sensitive Areas (ESAs) for paleontological resources. This submittal will be at a sufficient scale to clearly define the areas of impacts and the relative positions of original and final grades.

As discussed above, the areas of greatest paleontological concern occur in three primary areas along the proposed project alignment, here designated the Desert Region, Jacumba Valley Region, and Coastal Region. There are specific research themes associated with each of these identified areas of concern. These research questions would be applied during the application of a research design/discovery phase as appropriate.

Paleontological resources in the Desert Region are preserved in sedimentary rocks of the Imperial Group and Palm Spring Group. Research questions applied to these rock units concern:

- paleoecologic structure of late Miocene/early Pliocene marine invertebrate assemblages
- late Miocene/early Pliocene marine invertebrate evolution and systematics
- late Miocene/early Pliocene marine mammal diversity
- late Miocene/early Pliocene paleoenvironments of the proto-Gulf of California

- paleoecologic structure of late Pliocene/early Pleistocene land mammal assemblages
- late Pliocene/early Pleistocene land mammal biochronology
- late Pliocene/early Pleistocene non-marine paleoenvironments of the Salton Trough.

Paleontological resources in the Jacumba Valley Region are preserved in sedimentary rocks of the Anza Formation. Research questions applied to this rock unit concern:

- early Miocene land mammal assemblages of southern California
- early Miocene land mammal evolution
- early Miocene non-marine paleoenvironments of southern California.

Paleontological resources in the Coastal Region are preserved in sedimentary rocks of the Friars Formation, Stadium Conglomerate, Mission Valley Formation, and Pomerado Conglomerate Spring Group and Imperial Group. Research questions applied to these rock units concern:

- paleoecologic structure of middle Eocene land mammal assemblages
- middle Eocene land mammal evolution and systematics
- paleoecologic structure of middle Eocene land mammal assemblages
- paleoecologic structure of middle Eocene marine invertebrate assemblages
- middle Eocene marine and non-marine paleoenvironments of southern California
- middle Eocene sea level history of southern California.

2.4 Train Construction Personnel

Prior to the initiation of construction or ground-disturbing activities, all construction personnel will be trained regarding the recognition of possible subsurface paleontological resources and the protection of all paleontological resources during construction. Training will inform all construction personnel of the location and boundaries of any paleontological ESAs and the procedures to be followed upon the discovery of paleontological materials. Training will also emphasize to all personnel that unauthorized collection or disturbance of protected fossils on or off the right-of-way is prohibited and may result in dismissal from the project and/or criminal penalties and fines. Supervisory personnel will be instructed on procedures and notifications required in the event of discoveries by project personnel or paleontological monitors. Supervisory personnel will enforce restrictions on unauthorized collection or disturbance of fossils. This training has been developed as part of the Safe Worker Environmental Awareness Program (SWEAP) which is a training requirement for all participants in the SRPL project prior to their presence on the project.

2.5 Permits

Certain public jurisdictions have formal permitting policies and procedures governing survey work and fossil collecting on lands under their management. For example, the BLM requires that Consultant PIs obtain a Paleontological Resource Use Permit (e.g., Survey and Limited Surface Collection Permits). Such permits will be obtained before actual field work begins on BLM managed lands.

3.0 During Construction

The commencement of construction related excavation activities marks the time when potential impacts to paleontological resources will begin. To reduce these potential impacts to a level that is less than significant, some or all of the following actions are required as outlined in the CPUC-approved Mitigation Monitoring, Compliance, and Reporting Program.

3.1 Excavation Monitoring

A qualified paleontological monitor(s) will be present full-time during grading/excavation of native geological deposits that have been assigned a high and moderate paleontological resource sensitivity rating. As determined by the qualified paleontologist, part-time monitoring could be required for geological units with a low, marginal, or undetermined sensitivity rating. No monitoring will be required for geological deposits with zero paleontological sensitivity. The paleontological monitor will observe active excavation operations and inspect fresh cut slopes, graded pads, trench sidewalls, and borehole sidewalls and spoils for exposed fossil remains or traces. The paleontological monitor will document field activities using a daily log sheet and any other documents required by SDG&E and/or relevant jurisdiction. This record shall be sent to SDG&E environmental resources representative as requested. Confidential information shall not be given to non-qualified persons.

3.1.1 Qualifications – As required in the CPUC-approved Mitigation Monitoring, Compliance, and Reporting Program the qualified Principal Investigator/Paleontologist will have a Master's Degree or Ph.D. in paleontology, and will have knowledge of the local paleontology and professional familiarity with paleontological procedures and techniques. In turn, the qualified paleontological monitor(s) will have a BA in Geology or Paleontology and a minimum of one year of monitoring experience in local sedimentary rocks. Experience may be substituted on approval from BLM, USFS, or the CPUC. The names of any and all monitors will be submitted to SDG&E's Environmental Resources Specialist, BLM, USFS, and CPUC prior to beginning any work. Monitors cannot use personal cell phones or music/entertainment devices while on duty, and cannot bring pets or visitors/guests to the project area.

3.1.2 Ground Disturbance Activities – In all identified areas of concern the paleontological monitor will be present to observe ground disturbance where penetration exceeds 5 feet. The opportunity to observe sedimentary rocks within which fossils are present is ideal during trench and foundation excavation work. In contrast, observation of micro-pile drilling or jack and bore work is unlikely to produce any intact fossil materials of paleontological interest. It is the Construction Manager's responsibility to keep the paleontological monitor(s) up-to-date with current plans and any construction or scheduling changes. The monitors will coordinate with the Construction Management Lead to determine the timing for monitoring in the identified areas of concern. It will be the qualified paleontologist's responsibility to maintain communication and coordination with the construction team.

3.1.3 Stratigraphic data – Recording of stratigraphic data will be an on-going aspect of excavation monitoring to provide context for any eventual fossil discoveries. Outcrops exposed in active cuts and finished slopes should be examined and observed geologic features recorded on grading plans and field notes. The goal of this work is to delimit the nature of fossiliferous sedimentary rock units on the project site, determine their areal distribution and depositional contacts, and record any evidence of structural deformation. Standard geologic and stratigraphic data collected include lithologic descriptions (color, sorting, texture, structures, and grain size), stratigraphic relationships (bedding type, thickness, and contacts), and topographic position. Measurement of stratigraphic sections will be routinely done and areas containing exposures of fossiliferous sedimentary rocks will be studied in detail and fossil localities recorded on measured stratigraphic sections.

3.2 Paleontological Discoveries

The goal of paleontological monitoring is to observe excavation activities and to be onsite in the event that fossils are unearthed by grading, trenching, or drilling activities. When fossils are discovered the following procedures will be followed. Recovery methods will vary to some degree depending on the types of fossils discovered (e.g., macrofossils, microfossils, or plant fossils).

3.2.1 Discovery process – In the event of a discovery, the monitor or PI has the authority to temporarily stop construction or grading work at the discovery location. When work is stopped, the SDG&E Environmental Resources Specialist shall be contacted immediately. The monitor, under direction of the PI, will divert, direct, or temporarily halt ground disturbing activities in the area of discovery to allow for preliminary evaluation of potentially significant paleontological resources and to determine if additional mitigation (i.e., collection and curation) is required.

3.2.2 Determination of significance – The significance of the discovered resources will be determined by the PI in consultation with appropriate BLM, USFS, or CPUC representatives. For significant paleontological resources a data recovery program will be initiated that will follow the general steps outlined below with some refinements based on the type and nature of the specific discovery.

The types of research questions to be addressed by a particular fossil discovery are presented above and are specific to the identified project regions of sensitivity also discussed above. The data recovery program will largely be driven by the research questions and will incorporate appropriate field methods for data collection to answer these questions, as well as plans for the preparation, curation, and storage of recovered fossils, and an itemized scope of work and budget to accomplish the data collection and post-collection phases of fossil recovery.

3.2.3 Macrofossil recovery – Many fossil specimens discovered during excavation monitoring are readily visible to the naked eye and large enough to be easily recognized and removed. Upon discovery of such macrofossils, the paleontological monitor will temporarily flag the discovery site for avoidance and evaluation as described above. Actual recovery of unearthed macrofossils can involve several techniques including “pluck-and-run,” hand quarrying, plaster-jacketing, and/or large-scale quarrying. The “pluck-and-run” technique will be used when equipment activity in the vicinity of the discovery area is heavy and immediate action is required to remove an isolated specimen so as not to slow the progress of grading operations. “Pluck-and-run” recovery involves exploratory probing around a partially exposed fossil specimen to determine its dimensions, the application of consolidants (Acryloid, Butvar, or Vinac) to stabilize any damaged or weakened areas of the fossil, and removal of the specimen in a block of matrix. Hand quarrying typically consists of site specific “mining” of fossil-rich sedimentary rock layers without establishment of a geographic grid framework. Fragile fossils are stabilized as described above.

Particularly large vertebrate fossils require special handling because of their size and/or fragility and are typically recovered in a process called plaster-jacketing. The process begins by isolating a partially exposed specimen from the temporary exposure in a matrix-supported sedimentary pedestal. The pedestal is then slightly undercut at its base to form an overhanging lip and a layer of damp newsprint or tissue paper is placed on the upper surface of the block. Strips of burlap fabric are then soaked in a mixture of Plaster-of-Paris and laid across the matrix block to dry. Depending upon the volume of the block, one, two, or more layers of plaster-soaked burlap strips are formed on the block. Especially large blocks (over two feet in length) are reinforced with wooden or metal splints. Once the plaster hardens, the supporting pedestal is undercut and the block turned over. Hand tools are then used to remove any excess matrix from the bottom of the block and a plaster and burlap cap constructed on the inverted bottom of the block using the same methods described above. When all layers of plaster are dry and hard, the completed plaster "jacket" is then labeled with a field number and north arrow and removed from the field.

The discovery of a concentration of large vertebrate fossils would require more time for recovery. In such cases the PI will request an immediate halt of construction activities in the area of the fossil discovery and contact the appropriate BLM representative. Together, the PI and BLM representative will evaluate the discovery and take action to protect or remove the resource within 10 working days.

3.2.4 Microfossil recovery – Many significant vertebrate fossils (e.g., small mammal, bird, reptile, amphibian, or fish remains) often are too small to be readily visible in the field, but are nonetheless significant and worthy of attention." The potential discovery of microvertebrate sites is anticipated for this project and can include sites that produce remains of large vertebrates from fine-grained deposits, sites with an obvious concentration of small vertebrate remains, and sites that based on lithology alone (e.g., mudstones) appear to have a potential for producing small vertebrate remains. Microvertebrate sites will be sampled by collecting bulk quantities of sedimentary matrix using picks and shovels to loosen material and buckets and pick-up trucks to transport material.

3.2.5 Botanical fossils – The discovery of fossil plants is possible along the proposed SRPL FESSR, especially in the Desert Region of the alignment. Paleobotanical specimens typically occur in fine-grained, laminated strata (e.g., shale) and will require special recovery techniques as described below. Large blocks (>2 feet)of sedimentary rock are hand quarried from the temporary outcrop and then split along bedding plains to reveal compressed fossil plant material (e.g., leaves, stems, and flowers). Individual slabs are then wrapped in newsprint to minimize destruction of the fossils during desiccation. Specimens that are delaminating or flaking badly may need to be coated with special consolidants (e.g., Vinac or Butvar).

3.2.6 Data recovery – All fossil discoveries will also include the collection of stratigraphic data to delimit the nature of the fossil-bearing sedimentary rock unit, determine its areal distribution and depositional contacts, record any evidence of structural deformation, generate lithologic descriptions of fossil-bearing strata, determine stratigraphic relationships (bedding type, thickness, and contacts), and topographic position, measure stratigraphic sections, and describe taphonomic details.

4.0 Post Construction

Mitigation will not end with completion of the field related activities of paleontological monitoring and fossil recovery. Recovered fossils will then be prepared, identified, catalogued, and stored in a recognized professional repository and a final report written that summarizes the results of pre-construction, during-construction, and post-construction activities and findings.

4.1 Fossil Preparation

Fossil remains collected during the monitoring and salvage portion of the mitigation program will be cleaned, repaired, and/or screenwashed as described below.

4.1.1 Specimen preparation – Preparation of fossil specimens will involve removal of extraneous and concealing sedimentary matrix from specimens using various mechanical methods including pneumatic air scribes, micro sandblasters, and simple hand tools (hammers, chisels, X-acto knives, brushes, dental picks, and pin vises). Fossil preparation will also involve consolidation of weak or porous specimens by the application of specialized media including polyvinyl acetate resins (e.g., Vinac), acrylic resins (e.g., Acryloid), or polyvinyl butyral resins (e.g., Butvar). Repair of broken/damaged specimens will require the use of various adhesives including cyanoacrylate glues (e.g., Zap) polyvinyl acetate emulsions (e.g., Elmer's glue), and polyvinyl butyral resins (e.g., Butvar).

4.1.2 Screenwashing – Recovery of microvertebrate fossils will be accomplished by screenwashing bulk samples of fossil-bearing sedimentary matrix. The process begins by breaking large blocks into 2-3 cm cubes to facilitate air-drying of the matrix. Once dry, the matrix is placed into water-filled 5 gallon plastic buckets to soak for no less than 15 minutes with stirring. The slurry is then poured onto nested 20 (0.84 mm openings) and 30 (0.59 mm) mesh stainless steel screens placed in water-filled troughs. Manual agitation of the screens forces the fine clays and silts through the mesh and concentrates the coarser sand and fossil material on the screens. The screens are then placed at a tilt facing the sun to dry. Once dry, the coarse concentrate is transferred into plastic sample bags and labeled with all pertinent site locality data.

4.1.3 Heavy liquid floatation – Screenwashed concentrates can be further concentrated by the use of heavy liquids (e.g., zinc bromide and/or tetrabromoethane) to concentrate particles of equal density. Generally, fossil bones and teeth sink along with heavy mineral grains (e.g., magnetite) while lighter quartz and feldspar mineral grains float. This separation process produces a very rich concentration of fossil remains, typically isolated teeth of small mammals (e.g., rodents).

4.2 Fossil Curation

Following preparation of salvaged fossil remains the specimens will be sorted/picked, identified, and catalogued as described below.

4.2.1 Sorting/picking – Fossils require sorting/picking to group together specimens of the same taxon (e.g., species and/or genus).

4.2.2 Identification – Once sorted, individual taxon lots will then be identified to the lowest taxonomic level practical (e.g., family, genus, and/or species).

4.2.3 Cataloguing – Sorted and identified specimens are then assigned unique specimen catalogue numbers and entered into an electronic catalogue database. A specimen number may represent a single fossil specimen or a batch of specimens belonging to a single species. Catalogue numbers are written on individual specimens using India ink on a patch of white acrylic paint. Curation also involves placement of taxon lots into archival specimen trays with labels containing relevant curatorial information.

4.2.4 Locality data – Formal descriptions of fossil collecting locality records, including geographic, geologic, taphonomic, and collecting data, need to be written and stored electronically with the specimen catalogue data.

4.3 Fossil Storage

Fossils collected under a BLM Paleontological Resources Use Permit remain the property of the Federal Government and will be curated and stored in the paleontological collections of the San Diego Natural History Museum. All other salvaged fossil remains not recovered from federally managed lands also will be curated and stored in the paleontological collections of the San Diego Natural History Museum. For these fossil collections, clear title will be given to the Museum, which will then assume the responsibility to maintain and make available the fossil collections in perpetuity as part of the public trust. Agreements for curation responsibilities will be prepared and executed with the identified property owner or agency for public land. Generally property owners/managers are persuaded to “donate” discoveries once an agency or landowner is informed of the professional and financial responsibilities associated with professional curation and storage of recovered paleontological resources and understands that the Museum will assume these responsibilities in perpetuity. The assumption of responsibility for the curation of these discoveries by the Museum generally removes any notion of retaining ownership by the property owner.

4.4 Final Report

A final summary report will be completed that presents the results of the Paleontological Monitoring and Treatment Plan. This report will include discussions of the methods used, stratigraphic section(s) exposed, fossils collected, and significance of the recovered fossils relative to the research themes and questions. A complete inventory of salvaged, prepared, and curated fossils will be part of the final report. The report will be submitted to SDG&E, the BLM, the CPUC, and other appropriate land managing agencies or jurisdictions for review and approval.

Table 1 - Paleontological Resource Potential by Project Segment

Segment	Resource Potential				SDNHM Locality	LACMIP Locality
	High	Undetermined	Low	Zero		
1		Qoa			None	None
2	Tps, Ti	Qoa	Qya	Jsp	351, 2698, 4981	17401
3		Qoa		Tj	None	None
4		Qoa	Qya	Tj & MzPzm	None	None
5	Ta	Qoa	Qya	Tj, Klp, Kih, & Jsp	4801, 4802, 4805, 4806, 4852	None
6		Qoa & JTrm	Qya	Klp	None	None
7		Qoa & JTrm	Qya	Kc, Kgm, Klp, & Jcr	None	None
8				Klp	None	None
9			Qya	Kgm & Klp	None	None
10			Qya	Kcm, Kgm, & Klp	None	None
11				Kcm	None	None
12		Qoa	Qya	Ka, Kc, Kcm, Kjv, Kjvs, Kmv, & Jcr	None	None
13				Kjvs, Kcm, & Jcr	None	None
14				Ka	None	None
15			Qya	Ka, Klb, & KJld	None	None
16		Qoa	Qya	Ka, Kc, Klb, & Kmv	None	None
17	Tp & Tst	Qoa	Qya	Kgr & Ksp	None	None
18	Tp, Tst, & Tf	Qoa	Qya	Kgr & Ksp	5615, 5616	None

Appendix

Paleontological Records Search
San Diego Gas and Electric
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Introduction

The SDG&E Sunrise Powerlink transmission line right-of-way (ROW) traverses, from east to west, a portion of southwestern Imperial County beginning in Yuha Basin and skirting the southern end of the Coyote Mountains before crossing into eastern San Diego County along the Interstate 8 corridor. From here the ROW follows a circuitous route through Jacumba, McCain, Lost, and La Posta valleys, continues south of Lake Morena, Hauser Canyon, and Barrett Lake before turning north towards Japatul Valley and Interstate 8, which it parallels to the west through Alpine and then north again past El Capitan Reservoir and San Vicente Reservoir to terminate in the mesa and canyonlands east of Scripps Ranch. Along this ROW the transmission line crosses the western portion of the Colorado Desert, ascends the eastern escarpment of the Peninsular Ranges, traverses a series of mountain ranges and intervening alluvial valleys, and descends into the coastal plain. Crystalline basement rocks exposed in the core of the Peninsular Ranges are dominated by plutonic igneous rocks of the Peninsular Ranges Batholith, but also include Mesozoic and Paleozoic(?) pre-batholithic metavolcanic and metasedimentary rocks as well as some Tertiary volcanic rocks. Thick accumulations of Tertiary sedimentary rocks are widely exposed both east and west of the Peninsular Ranges. These include marine and nonmarine deposits of Miocene (~15 million years old, Ma) through Pleistocene (~1 Ma) age in the Colorado Desert and marine and nonmarine deposits of Cretaceous (~75 Ma) through Pleistocene (~1 Ma) age in the coastal plain. Remnant patches of Miocene (~16 Ma) age sedimentary rocks also occur beneath younger volcanic flow rocks in the Jacumba Valley area.

The paleontological record preserved in these sedimentary rocks is significant on both a regional and global level. In the Colorado Desert, Miocene deposits of the Imperial Group contain fossils of tropical marine corals, mollusks, and sea urchins that lived in a northern extension of an ancestral Gulf of California. Pliocene and Pleistocene nonmarine deposits of the Palm Spring Group contain what is arguably the most complete sequence of Plio-Pleistocene terrestrial vertebrate fossils in North America. Turning to the coastal plain, the Eocene sedimentary rocks of the Pomerado Conglomerate, Stadium Conglomerate, and Friars Formation preserve some of the most diverse assemblages of early land mammals known from California.

As defined here, paleontological resources (i.e., fossils) are the remains and/or traces of prehistoric plant and animal life exclusive of humans. Fossil remains such as bones, teeth, shells, leaves, and wood are found in the geologic deposits (rock formations) within which they were originally buried. For the purposes of this report, paleontological resources can be thought of as including not only actual fossil remains, but also the collecting localities where those remains are recovered and the geologic formations containing the collecting localities. This emphasizes the direct relationship between fossils and the geologic formations within which they are entombed. With this relationship in mind knowledge of the geology of a particular area and the paleontological resource sensitivity (i.e., fossil productivity) of particular rock formations makes it possible to predict where fossils might (or might not) be encountered.

This report describes the existing geologic conditions for 18 segments along the ROW, summarizes the results of a review of institutional paleontological collecting records, and provides a discussion of the paleontological resource potential for each segment. The report was prepared by Thomas A. Deméré, Sarah A. Siren, and Kesler A.

Randall of the Department of PaleoServices at the San Diego Natural History Museum. Resources consulted include published geologic reports (Weber, 1963; Morton, 1977; Kennedy and Peterson, 1975; Todd, 2004; Kennedy and Tan, 2005), published and unpublished paleontological reports (Walsh, 1991, 1996; Demere and Walsh, 1993; Jefferson and Lindsay, 2006), and museum paleontological collecting records (Department of Invertebrate Paleontology, Natural History Museum of Los Angeles County, LACMIP; Division of Geological Sciences, San Bernardino County Museum, SBCM; and Department of Paleontology, San Diego Natural History Museum, SDNHM).

Existing Conditions

The following is an annotated listing of existing geologic and paleontological conditions and resource sensitivity for the 18 project segments (in order from east to west). Maps contained in Appendix A (Maps 1-28) summarize the areal extent of mapped geologic rock units within one-mile of the project alignment and include locations of recorded paleontological collecting sites (detailed in Appendices B and C). Keeping in mind the direct relationship between fossils and the geologic formations within which they are entombed, the geologic mapping serves as a reliable indicator of the areal distribution of paleontological resources. Appendix D contains a detailed listing of the linear footprint (for every tenth of a mile) of specific rock units underlining the immediate area of the proposed transmission line.

Imperial County - Segments 1-4:

Segment 1 (MP 0 – Imperial Valley Substation)

Geology: Pleistocene older alluvium (Qoa) is mapped (Map 1) at the Imperial Valley Substation location (Ludington, 2005; Morton, 1977).

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of the Imperial Valley Substation.

Resource Sensitivity: Pleistocene older alluvium (Qoa) has an unknown, but possibly high potential to contain paleontological resources (Table 1).

Segment 2 (MP 0 to 19.2)

Geology: Holocene young alluvium (Qya), Pleistocene older alluvium (Qoa), lake beds of ancient Lake Cahuilla (Ql), the Palm Spring Formation (now referred to as the Palm Spring Group [Tps]), the Imperial Formation (now referred to as the Imperial Group [Ti]), and Middle and Upper Jurassic migmatitic schist and gneiss of Stephenson Peak (Jsp) are mapped (Maps 1-6) along this segment (Ludington, 2005; Morton, 1977; Todd, 2004).

Paleontology: SDNHM Localities 351 and 2698 are located north of the alignment within Section 14, as shown on the Carrizo Mountain 7.5' Topographic Quadrangle (Map 6). These localities were discovered in Alverson Canyon (a.k.a. Fossil Canyon) in the southern Coyote Mountains (see Appendix B). The fossil-bearing sedimentary rocks here were mapped as the Imperial Formation by Morton (1977); however, more recent publications have elevated the Imperial Formation (Ti) to group status (Jefferson and Lindsay, 2006). Within the Imperial Group, SDSNH Localities 351 and 2698 were discovered in the basal sandstones of the late Miocene-age Latrania Formation. The fossils found consist of remains of marine mollusks including snails (e.g., bubble shells, staircase shells, and conchs) and bivalves (e.g., scallops and lucine clams). Further east of these two localities, SDSNH Locality 4981 is located within Section 10 on the eastern edge of the Coyote Mountains and south of the proposed alignment, as shown on the Painted Gorge 7.5' Topographic Quadrangle in Imperial County (Map 4). This locality yielded fossil remains of additional marine invertebrates including shipworm clams, jingle shells, oysters, scallops, cockles, and barnacles, all discovered weathering out of natural outcroppings of sedimentary rocks. The nearest LACMIP Locality 17401 is located more than one mile north of MP 15.5, on the southeast flank of the Coyote Mountains (Map 5). This locality was discovered in sedimentary rocks of the Latrania Formation and consisted of strata containing fossil remains of scallops (see Appendix C).

Resource Sensitivity: Sedimentary rocks of the Palm Spring Group and Imperial Group have a high potential to produce significant paleontological resources, while sedimentary deposits of Pleistocene older alluvium (Qoa) and lake beds of ancient Lake Cahuilla (Ql) have an unknown, but possibly high potential to contain paleontological resources. Sedimentary deposits of Holocene young alluvium (Qya) have a low potential to contain paleontological resources. In contrast, metamorphic rocks (Jsp) along this portion of the alignment have no potential to contain paleontological resources (Table 1).

Segment 3 (MP 19.2 to 23.2)

Geology: Holocene young alluvium (Qya) and Miocene Jacumba Volcanics (Tj) are mapped (Maps 6 & 7) along this segment (Todd, 2004).

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment.

Resource Sensitivity: The Holocene young alluvium (Qya) has a low paleontological resource potential, while the volcanic rocks (Tj) along this portion of the alignment have no potential to contain paleontological resources (Table 1).

Segment 4 (MP 23.2 to 30.3)

Geology: Holocene young alluvium (Qya), Miocene Split Mountain Formation (Tsm), Miocene Jacumba Volcanics (Tj), Lower and Upper Cretaceous tonalite of La Posta (Klp), and Mesozoic and Paleozoic? rocks of Jacumba Mountains (MzPzm; Todd, 2004) are mapped (Maps 7 & 8) along this segment. The Split Mountain Formation, however, does not crop out along the centerline of the ROW. The tonalite of La Posta represents an individual pluton within the larger Peninsular Ranges Batholith.

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment of the alignment.

Resource Sensitivity: Holocene young alluvium (Qya) has a low potential to yield significant fossils, whereas Pleistocene older alluvium (Qoa) and the Split Mountain Formation have an unknown potential to contain paleontological resources. Igneous rocks (Tj and Klp) and pre-batholithic metamorphic rocks (MxPzm) along this portion of the alignment have no potential to contain paleontological resources (Table 1).

San Diego County – Segments 5-18:

Segment 5 (MP 30.3 to 39.7)

Geology: Holocene young alluvium (Qya), Pleistocene older alluvium (Qoa), Miocene Anza Formation (Ta), Miocene Jacumba Volcanics (Tj), Lower and Upper Cretaceous tonalite of La Posta (Klp), Upper Cretaceous Indian Hill granodiorite of Parrish and others, 1986 (Kih), and Middle and Upper Jurassic migmatitic schist and gneiss of Stephenson Peak (Jsp) are mapped (Maps 8-11) along the alignment in this location (Todd, 2004). The Indian Hill granodirorite represents an individual pluton within the larger Peninsular Ranges Batholith.

Paleontology: SDSNH Localities 4801 to 4802 and 4805 to 4806 are located north of the proposed alignment within Section 5, as shown on the Jacumba 7.5' Topographic Quadrangle near the community of Jacumba in eastern San Diego County (Map 10). South of the proposed alignment, SDSNH Locality 4852 is located within Section 6 (Map 10). These fossil collecting localities were discovered in sedimentary rocks of the Miocene Anza Formation (equals Table Mountain Formation of other workers) and yielded vertebrate fossil remains, including bones of rabbits and camels, all discovered weathering out of surface outcroppings (see Appendix B).

Resource Sensitivity: Holocene young alluvium (Qya) has a low potential to yield significant fossils, while sedimentary deposits of Pleistocene older alluvium (Qoa) have an unknown, but possibly high potential to contain paleontological resources. The non-marine sandstones of the Miocene Anza Formation have a high potential to produce significant paleontological resources based on the known occurrence of vertebrate fossils in this rock unit. In contrast, Miocene volcanic rocks (Tj) and older plutonic (Klp and Kih) and metamorphic (Jsp) rocks mapped along this segment have no potential to yield paleontological resources (Table 1).

Segment 6 (MP 39.7 to 52.5)

Geology: Holocene young alluvium (Qya), Pleistocene older alluvium (Qoa), Lower and Upper Cretaceous tonalite of La Posta (Klp), and Jurassic and Triassic metasedimentary and metavolcanic rocks equivalent to the Julian Schist (JT_rm) are mapped (Maps11-14) along this segment (Todd, 2004).

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment.

Resource Sensitivity: Holocene young alluvium (Qya) has a low potential to yield significant fossils, whereas Pleistocene older alluvium (Qoa) has an unknown, but possibly high potential to contain paleontological resources. Igneous (Klp) and metavolcanic (JT_rm) rocks along the alignment have no potential to yield significant fossil. However, metasedimentary rocks of the Julian Schist (JT_rm) have an unknown potential based on discovery of an ammonite (prehistoric cephalopod) from slightly metamorphosed shale within the Julian Schist discovered elsewhere in San Diego County (Table 1).

Segment 7 (MP 52.5 to 61.3)

Geology: Holocene young alluvium (Qya), Pleistocene older alluvium (Qoa), Lower Cretaceous Cuyamaca gabbro (Kc), Lower Cretaceous tonalite of Granite

Mountain (Kgm), Lower and Upper Cretaceous tonalite of La Posta (Klp), Middle and Upper Jurassic granodiorite of Cuyamaca Reservoir (Jcr), and Jurassic and Triassic metasedimentary and metavolcanic rocks equivalent to the Julian Schist (JT_rm) are mapped (Maps 14-16) along this segment (Todd, 2004). The Cuyamaca gabbro, tonalite of Granite Mountain, and granodiorite of Cuyamaca Reservoir represent individual plutons within the larger Peninsular Ranges Batholith.

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment.

Resource Sensitivity: Holocene young alluvium (Qya) has a low potential to yield significant fossils, whereas Pleistocene older alluvium (Qoa) has an unknown, but possibly high potential to contain paleontological resources. Igneous (Kc, Kgm, Klp, and Jcr) and metavolcanic (JT_rm) rocks mapped along this segment have no potential to yield significant fossils. However, the metasedimentary rocks of the Julian Schist (JT_rm) have an unknown potential to yield fossil resources (Table 1).

Segment 8 (MP 61.3 to 65.4)

Geology: Only plutonic igneous rocks of the Lower and Upper Cretaceous tonalite of La Posta (Klp) are mapped (Map 16) along this segment.

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment.

Resource Sensitivity: Cretaceous plutonic igneous rocks (Klp) mapped along this segment have no potential to contain paleontological resources (Table 1).

Segment 9 (MP 65.4 to 70.9)

Geology: Holocene young alluvium (Qya), Lower Cretaceous tonalite of Granite Mountain including subunits 1-3 (Kgm), and Lower and Upper Cretaceous tonalite of La Posta, (Klp) are mapped (Maps 16-18) along this segment (Todd, 2004).

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment.

Resource Sensitivity: Holocene young alluvium (Qya) has a low potential to contain paleontological resources. Plutonic igneous rocks (Kgm and Klp) mapped along this segment have no potential to contain paleontological resources (Table 1).

Segment 10 (MP 70.9 to 74.8)

Geology: Holocene young alluvium (Qya), Lower Cretaceous Corte Madera monzogranite (Kcm), Lower Cretaceous tonalite of Granite Mountain including subunits 2 and 3 (Kgm), and Lower and Upper Cretaceous tonalite of La Posta (Klp) are mapped (Maps 18 & 19) along this segment (Todd, 2004). The Corte Madera monzogranite represents an individual pluton within the larger Peninsular Ranges Batholith.

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment.

Resource Sensitivity: Holocene young alluvium (Qya) has a low potential to contain paleontological resources. Plutonic igneous rocks (Kcm, Kgm, and Klp) mapped along this segment have no potential to contain paleontological resources (Table 1).

Segment 11 (MP 74.8 to 77.6)

Geology: Only the Lower Cretaceous Corte Madera monzogranite (Kcm) is mapped (Maps 19 & 20) along this segment.

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment.

Resource Sensitivity: The Cretaceous plutonic igneous rocks (Kcm) mapped along this segment have no potential to contain paleontological resources (Table 1).

Segment 12 (MP 77.6 to 90.0)

Geology: Holocene young alluvium (Qya), Pleistocene older alluvium (Qoa), Early Cretaceous tonalite of Alpine (Ka), Early Cretaceous Cuyamaca gabbro (Kc), lower Cretaceous Corte Madera monzogranite (Kcm), Lower Cretaceous Japatul Valley tonalite (Kjv), Cretaceous and Jurassic? metavolcanic and metasedimentary rocks (Kjvs), Lower Cretaceous metavolcanic rocks (Kmv), and Middle and Upper Jurassic granodiorite of Cuyamaca Reservoir (Jcr) are mapped (Maps 20-22) along this segment (Todd, 2004). The Japatul Valley tonalite represents an individual pluton within the larger Peninsular Ranges Batholith.

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment.

Resource Sensitivity: Holocene young alluvium (Qya) has been assigned a low paleontological resource potential, whereas Pleistocene older alluvium (Qoa) has an unknown, but possibly high potential to contain paleontological resources. Igneous and metamorphic rocks (Ka, Kc, Kcm, Kjv, Kjvs, Kmv, and Jcr) underlying this portion of the alignment have no potential to yield fossil resources (Table 1).

Segment 13 (Suncrest Substation, between MP 89 and 90)

Geology: Cretaceous and Jurassic? metavolcanic and metasedimentary rocks (Kjvs), Lower Cretaceous Corte Madera monzogranite (Kcm), and Middle and Upper Jurassic granodiorite of Cuyamaca Reservoir (Jcr) are mapped (Map 22) at the Suncrest Substation (Todd, 2004).

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment.

Resource Sensitivity: Igneous and metamorphic rocks (Kjvs, Kcm, and Jcr) mapped along this portion of the alignment have no potential to yield significant fossils (Table 1).

Segment 14 (MP 90.0 to 92.8)

Geology: Only the Lower Cretaceous tonalite of Alpine (Ka) is mapped (Map 22) along this segment (Todd, 2004). The tonalite of Alpine represents an individual pluton within the larger Peninsular Ranges Batholith.

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment.

Resource Sensitivity: Plutonic igneous rocks (Ka) mapped along this portion of the alignment have no potential to contain paleontological resources (Table 1).

Segment 15 (MP 92.8 to 99.0)

Geology: Holocene young alluvium (Qya), Upper Cretaceous Lusardi Formation (Kl), Lower Cretaceous tonalite of Alpine (Ka), Lower Cretaceous tonalite of Las Blancas (Klb), and Upper Cretaceous and Upper Jurassic leucogranite dikes (KJld) are mapped (Maps 22-24) along this segment (Todd, 2004). The tonalite of Las Blancas represents an individual pluton within the larger Peninsular Ranges Batholith.

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment.

Resource Sensitivity: Sedimentary deposits of Holocene young alluvium (Qya) and Cretaceous Lusardi Formation have a low potential to contain paleontological resources. Plutonic igneous rocks (Ka, Klb, and KJld) underlying this portion of the alignment have no potential to yield significant fossils (Table 1).

Segment 16 (MP 99.0 to 105.5)

Geology: Holocene young alluvium (Qya), Pleistocene older alluvium (Qoa), Lower Cretaceous tonalite of Alpine (Ka), Lower Cretaceous Cuyamaca gabbro (Kc), Lower Cretaceous tonalite of Las Blancas (Klb), and Lower Cretaceous metavolcanic rocks (Kmv) are mapped (Maps 24 & 25) along this segment (Todd, 2004).

Paleontology: No SDNHM or LACMIP fossil localities are mapped within a half-mile of this segment.

Resource Sensitivity: Holocene young alluvium (Qya) has been assigned a low potential, whereas Pleistocene older alluvium (Qoa) has an unknown, but possibly high potential to contain paleontological resources. Plutonic rocks (Ka, Kc, and Klb) and metavolcanic rocks (Kmv) have no potential to contain paleontological resources (Table 1).

Segment 17 (MP 105.5 to 112.7)

Geology: Holocene young alluvium (Qya), Eocene Pomerado Conglomerate (Tp), Eocene Stadium Conglomerate (Tst), Upper Cretaceous Lusardi Formation (Kl), Lower Cretaceous granitoid rocks (Kgr), and Lower Cretaceous Santiago Peak Volcanics (Ksp) are mapped (Maps 25-27) along this segment, with the potential to encounter Pleistocene older alluvium (Qoa) and Eocene Friars Formation (Tf) at depth (Todd, 2004).

Paleontology: Although no fossil collecting localities are recorded from within a half-mile of this portion of the alignment, significant vertebrate fossils have been recovered nearby from Eocene sedimentary rocks of the Pomerado Conglomerate, Stadium Conglomerate, and Friars Formation.

Resource Sensitivity: Sedimentary deposits of Holocene young alluvium (Qya) and Cretaceous Lusardi Formation have a low potential to contain paleontological resources. Eocene sedimentary rocks of the Pomerado Conglomerate and Stadium Conglomerate have a high potential to produce significant paleontological resources. Also, at an unknown depth below Holocene young alluvium (Qya-low potential) at MP 109, Pleistocene older alluvium (Qoa) and Eocene Friars Formation (Tf) (high potential) may be encountered. Plutonic rocks (Kgr) and metavolcanic rocks (Ksp) have no potential to contain paleontological resources (Table 1).

Segment 18 (MP 112.7 to 118.1)

Geology: Holocene young alluvium (Qya), Eocene Pomerado Conglomerate (Tp), Eocene Mission Valley (Tmv), Eocene Stadium Conglomerate (Tst), Eocene Friars Formation (Tf), Lower Cretaceous granitoid rocks (Kgr), and Lower Cretaceous Santiago Peak Volcanics (Ksp) are mapped (Maps 27 & 28) along this segment (Kennedy and Peterson, 1975).

Paleontology: Within this segment, north of State Route 52 in the vicinity of Sycamore Canyon, Eocene-age sedimentary rock units (e.g., Pomerado and Stadium conglomerates, and the Mission Valley Formation, MP 113 to MP 118) are known to produce significant vertebrate fossil remains. Although unmapped at the surface, there are several recorded fossil collecting localities in the area from the Friars Formation (Tf). SDSNH Localities 5615 and 5616 are located within Section 30, north of the proposed alignment along Beeler Canyon (Map 28). Each of these recorded localities yielded vertebrate fossil remains of lizards, marsupials, insectivores, primates, rodents, and oreodonts. The localities were discovered during paleontological monitoring of construction-related mass-grading activities.

Resource Sensitivity: Holocene young alluvium (Qya) has a low potential to contain paleontological resources, while plutonic rocks (Kgr) and metavolcanic rocks (Ksp) have no potential to contain paleontological resources. Eocene-age sedimentary rock units (Tp, Tmv, Tst, and Tf) have a high paleontological resource potential. Also, at an unknown depth below Holocene young alluvium (Qya-low potential), Pleistocene older alluvium (Qoa-high potential) may be encountered.

Discussion

The distribution of paleontological resources along the proposed Sunrise Powerlink transmission line is not uniform, with significant paleontological resources located only along the extreme eastern (Segments 2 and 5) and extreme western (Segments 17 and 18) portions of the ROW. See Appendix D for a detailed inventory of paleontological resources by milepost. Segment 2 crosses marine sedimentary rocks of Late Miocene and Early Pliocene age (Imperial Group) and non-marine sedimentary rocks of Late Pliocene and Early Pleistocene age (Palm Spring Group). Segment 5 crosses non-marine sedimentary rocks of Middle Miocene age (Anza Formation), while Segment 18 crosses non-marine sedimentary rocks of Middle Eocene age (Pomerado Conglomerate, Stadium Conglomerate, and Friars Formation). All of these sedimentary rock units have produced significant paleontological resources as documented in institutional records. Pleistocene older alluvium occurs as isolated outliers along portions of Segments 1, 2, 3, 4, 5, 6, 7, 12, and 16 and has an unproven potential to produce significant paleontological resources. Metasedimentary rocks of the Julian Schist occur along Segments 6 and 7 and retain an unknown potential to preserve significant paleontological resources.

Between Segments 5 and 17 the geology of the ROW is dominated by plutonic igneous rocks of the Peninsular Ranges Batholith, a regional plutonic mass made up of individual plutons of tonalite, granodiorite, monzogranite, and gabbro composition, as well as leucogranitic dike rocks. These plutonic rocks and the surrounding metavolcanic rocks they intruded formed under high temperature conditions that preclude the occurrence of paleontological resources. Prebatholoithic metasedimentary rocks of the Julian Schist exposed along Segments 6 and 7 were also intruded by plutonic rocks, but retain the potential to preserve significant paleontological resources because of their Mesozoic marine sedimentary origin.

Table 1 – Paleontological Resource Potential by Project Segment

Segment	Resource Potential				SDNHM Locality	LACMIP Locality
	High	Unknown	Low	No		
1		Qoa			None	None
2	Tps, Ti	Qoa	Qya	Jsp	351, 2698, 4981	17401
3		Qoa		Tj	None	None
4		Qoa	Qya	Tj & MzPzm	None	None
5	Ta	Qoa	Qya	Tj, Klp, Kih, & Jsp	4801, 4802, 4805, 4806, 4852	None
6		Qoa & JTrm	Qya	Klp	None	None
7		Qoa & JTrm	Qya	Kc, Kgm, Klp, & Jcr	None	None
8				Klp	None	None
9			Qya	Kgm & Klp	None	None
10			Qya	Kcm, Kgm, & Klp	None	None
11				Kcm	None	None
12		Qoa	Qya	Ka, Kc, Kcm, Kjv, Kjvs, Kmv, & Jcr	None	None
13				Kjvs, Kcm, & Jcr	None	None
14				Ka	None	None
15			Qya	Ka, Klb, & KJld	None	None
16		Qoa	Qya	Ka, Kc, Klb, & Kmv	None	None
17	Tp & Tst	Qoa	Qya	Kgr & Ksp	None	None
18	Tp, Tst, & Tf	Qoa	Qya	Kgr & Ksp	5615, 5616	None

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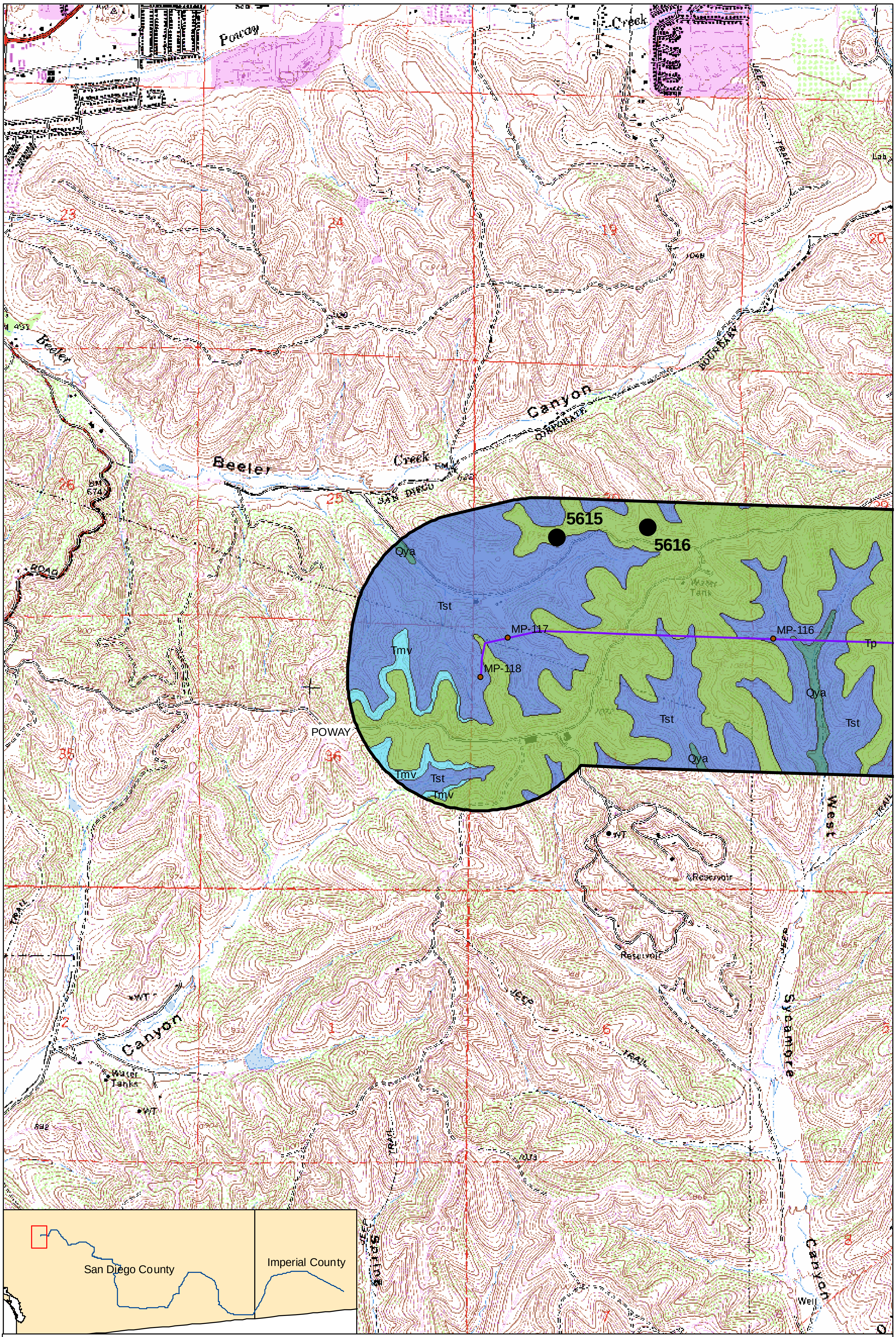
Appendices

Appendix A

Resource Maps



- Fossil Localities
- Sunrise Powerlink
- 1 Mile Buffer

- Qya, Young alluvial flood plain deposits
- Tmv, Mission Valley Formation
- Tp, Pomerado Conglomerate
- Tst, Stadium Conglomerate

1:24,000

San Diego Gas & Electric

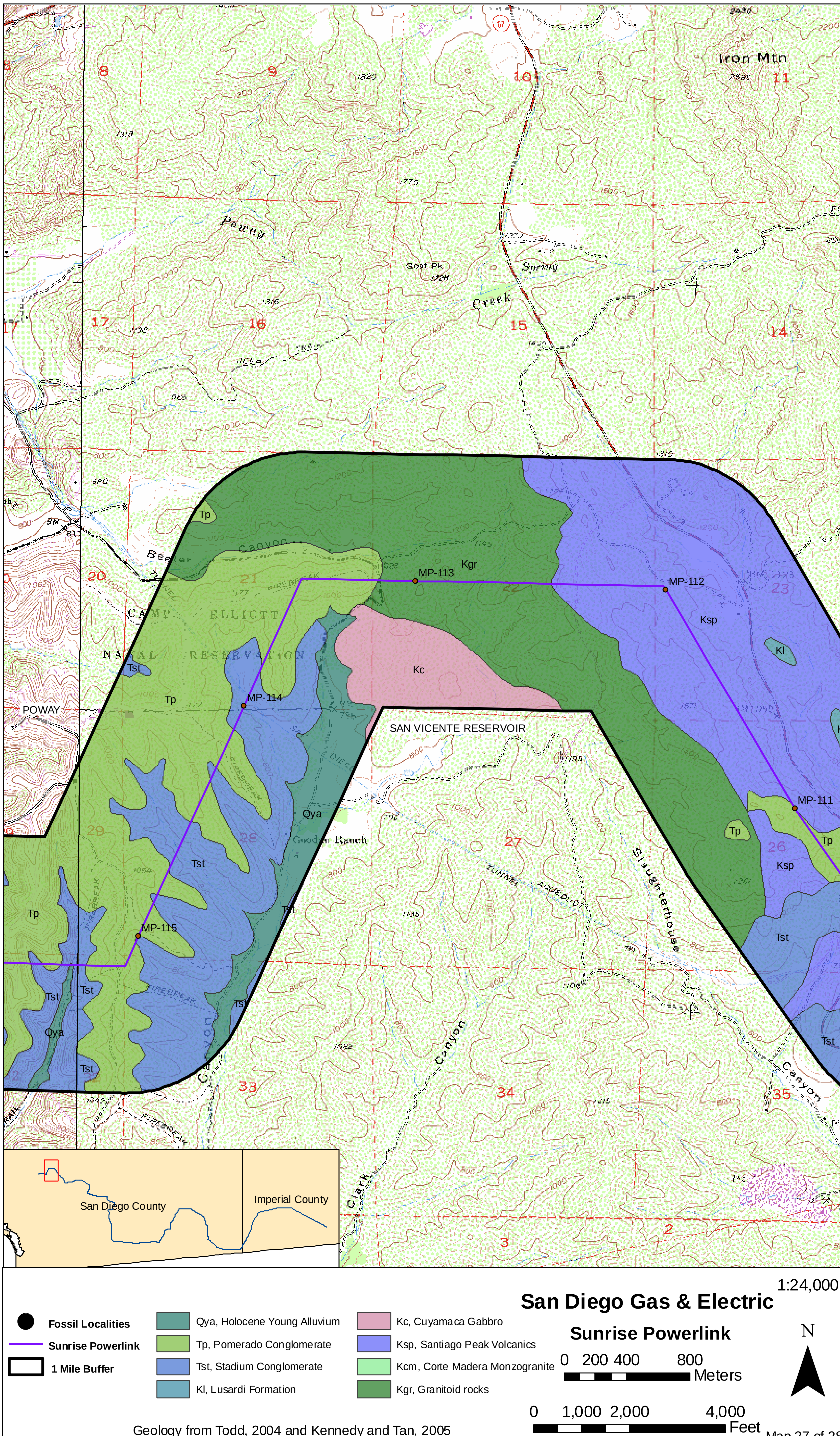
Sunrise Powerlink

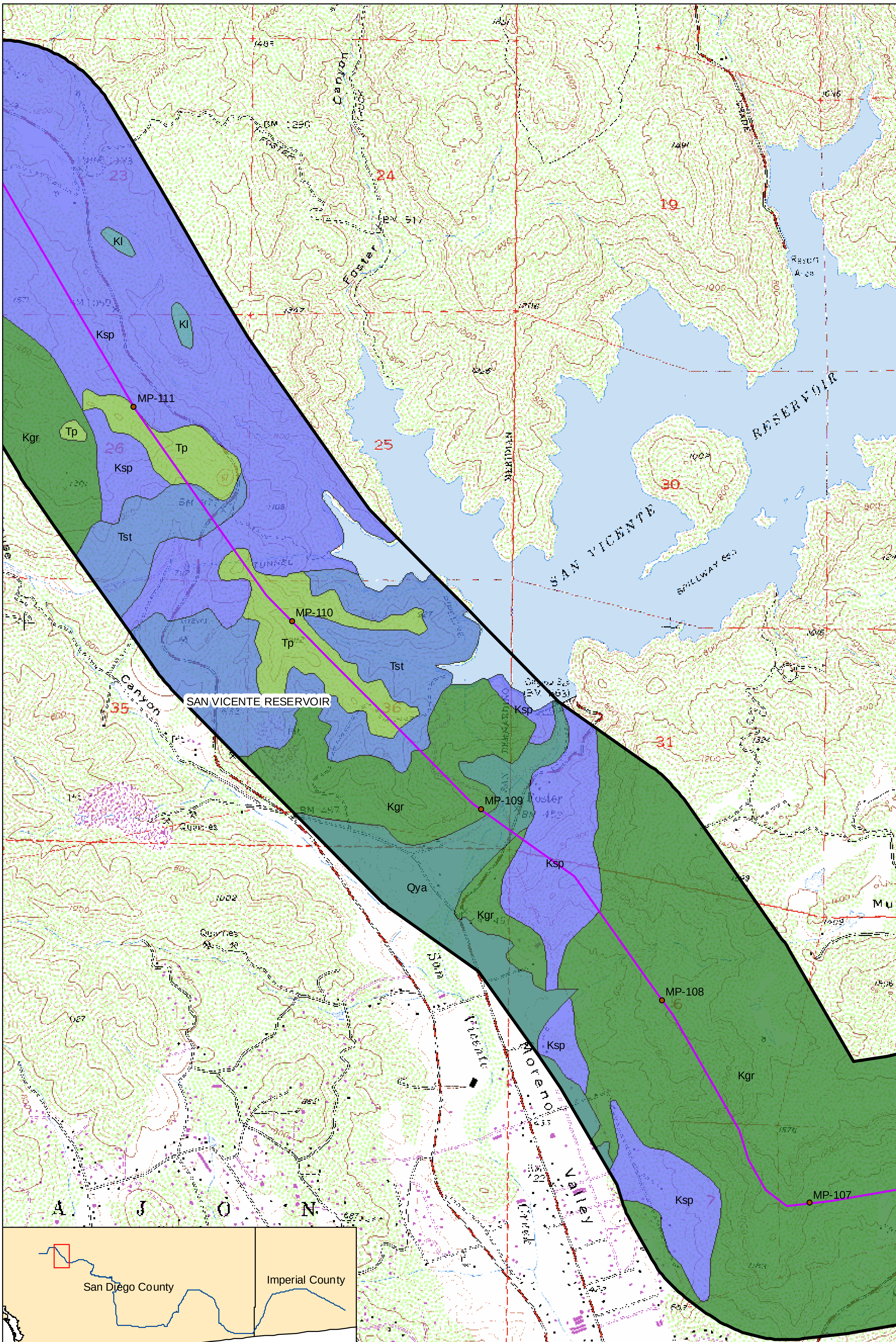
N

0 200 400 800 Meters

0 1,050 2,100 4,200 Feet

Geology from Todd, 2004 and Kennedy and Tan, 2005


Iron Mtn
Poway
Goat Pk
Spring
Creek
Beeler
Canyon
CAMP ELLIOTT
NAVAL RESERVATION
POWAY
SAN VICENTE RESERVOIR
Goodan Ranch
TUNNEL AQUEDUCT
Slaughterhouse
Canyon
Clark
MP-111
MP-112
MP-113
MP-114
MP-115
Kgr
Ksp
Kl
Kc
Tp
Tst
Qya
San Diego County
Imperial County
Fossil Localities
Sunrise Powerlink
1 Mile Buffer
Qya, Holocene Young Alluvium
Tp, Pomerado Conglomerate
Tst, Stadium Conglomerate
Kl, Lusardi Formation
Kc, Cuyamaca Gabbro
Ksp, Santiago Peak Volcanics
Kcm, Corte Madera Monzogranite
Kgr, Granitoid rocks
1:24,000
San Diego Gas & Electric
Sunrise Powerlink
N
0 200 400 800
Meters
0 1,000 2,000 4,000
Feet
Geology from Todd, 2004 and Kennedy and Tan, 2005
Map 27 of 28



San Diego Gas & Electric

1:24,000

Sunrise Powerlink

- Fossil Localities
- Sunrise Powerlink
- 1 Mile Buffer

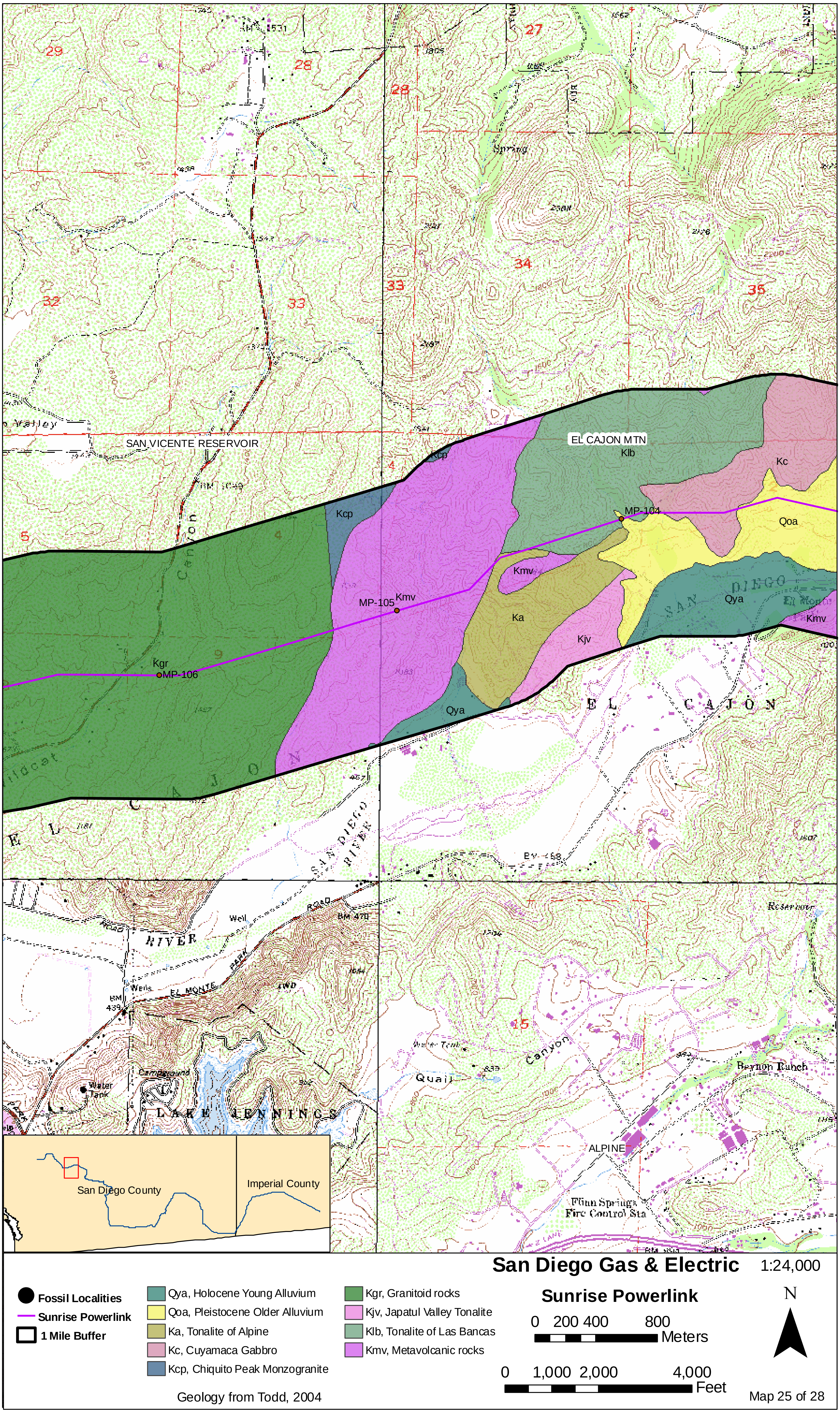
- Qya, Holocene Young Alluvium
- Tp, Pomerado Conglomerate
- Tst, Stadium Conglomerate
- Kl, Lusardi Formation
- Kgr, Granitoid rocks
- Ksp, Santiago Peak Volcanics

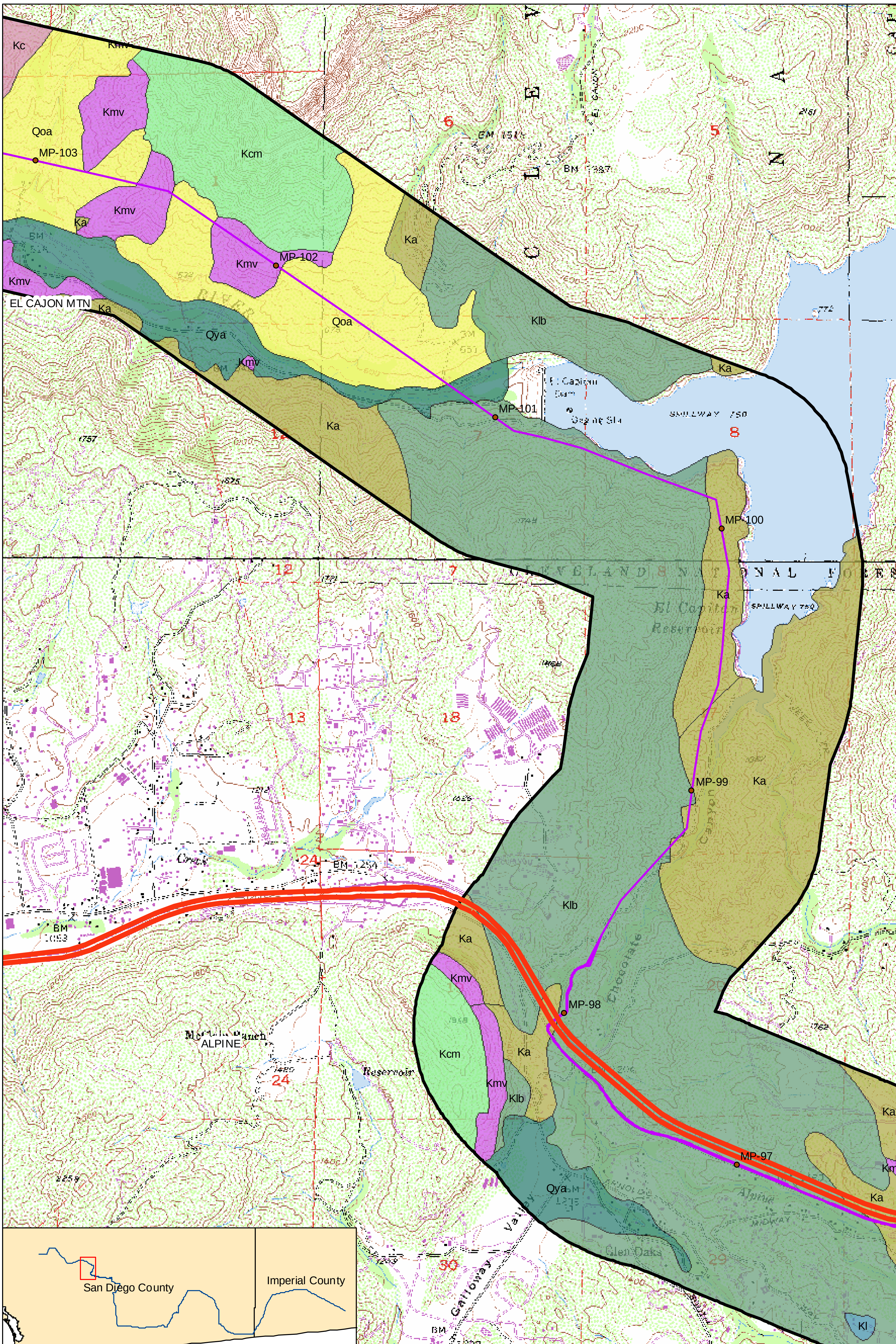
0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

N

Geology from Todd, 2004


SAN VICENTE RESERVOIR
EL CAJON MTN
Klb
Kc
Qoa
MP-104
Kcp
Kmv
MP-105
Ka
Kjv
Qya
Kgr
MP-106
ALPINE
San Diego County
Imperial County
San Diego Gas & Electric
1:24,000
Sunrise Powerlink
0 200 400 800 Meters
0 1,000 2,000 4,000 Feet
N
Fossil Localities
Sunrise Powerlink
1 Mile Buffer
Qya, Holocene Young Alluvium
Qoa, Pleistocene Older Alluvium
Ka, Tonalite of Alpine
Kc, Cuyamaca Gabbro
Kcp, Chiquito Peak Monzogranite
Kgr, Granitoid rocks
Kjv, Japatul Valley Tonalite
Klb, Tonalite of Las Bancas
Kmv, Metavolcanic rocks
Geology from Todd, 2004
Map 25 of 28



San Diego Gas & Electric

1:24,000

Sunrise Powerlink

N

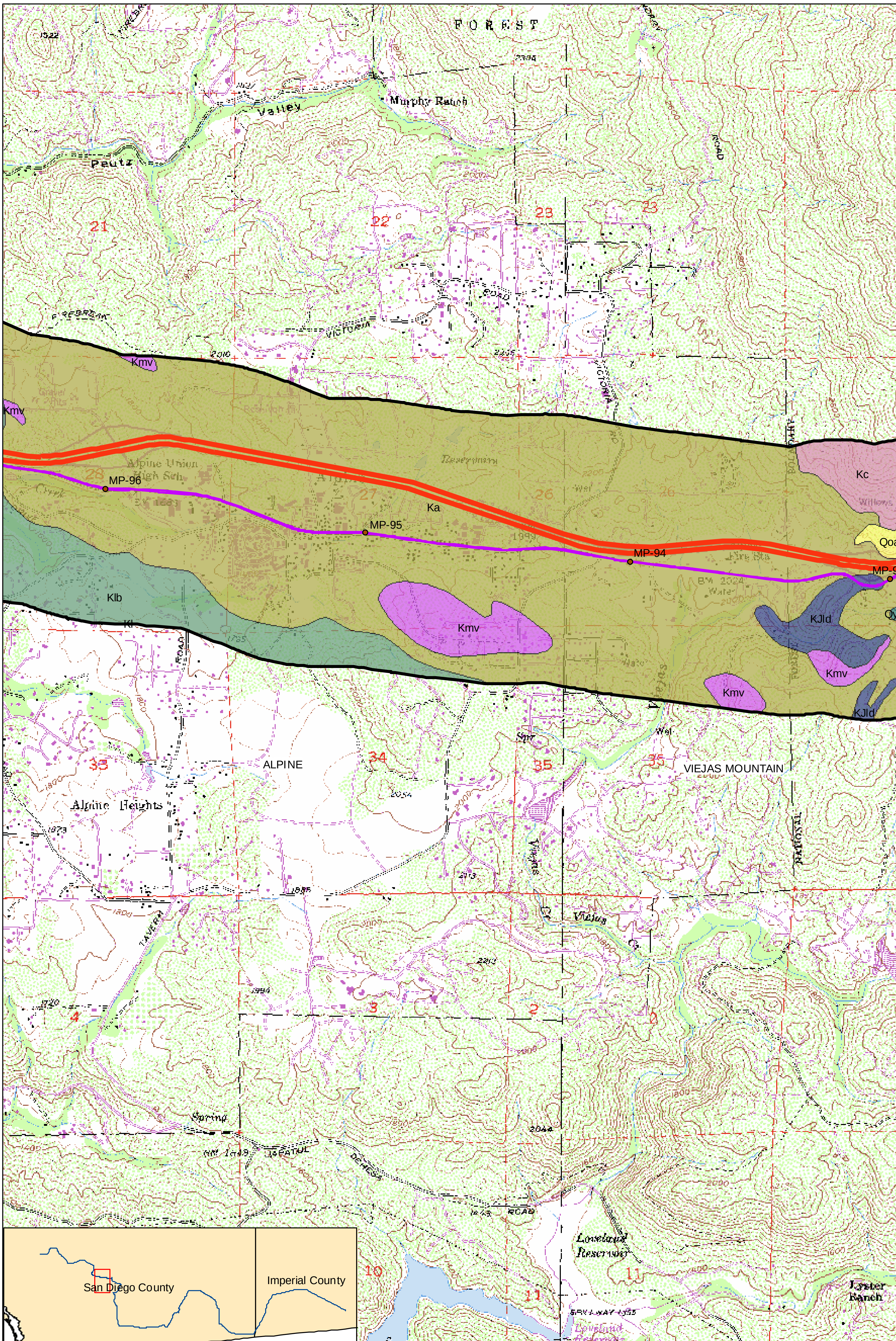
0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

Fossil Localities
Sunrise Powerlink
1 Mile Buffer

Qya, Holocene Young Alluvium
Qoa, Pleistocene Older Alluvium
Kl, Lusardi Formation
Ka, Tonalite of Alpine
Kc, Cuyamaca Gabbro
Kcm, Corte Madera Monzogranite
Klb, Tonalite of Las Bancas
Kmv, Metavolcanic rocks

Geology from Todd, 2004



San Diego Gas & Electric

1:24,000

Sunrise Powerlink

- **Fossil Localities**
- **Sunrise Powerlink**
- **1 Mile Buffer**

Qya, Holocene Young Alluvium
Qoa, Pleistocene Older Alluvium
Kl, Lusardi Formation
KJld, Leucocratic dikes
Ka, Tonalite of Alpine
Kc, Cuyamaca Gabbro
Klb, Tonalite of Las Bancas
Kmv, Metavolcanic rocks

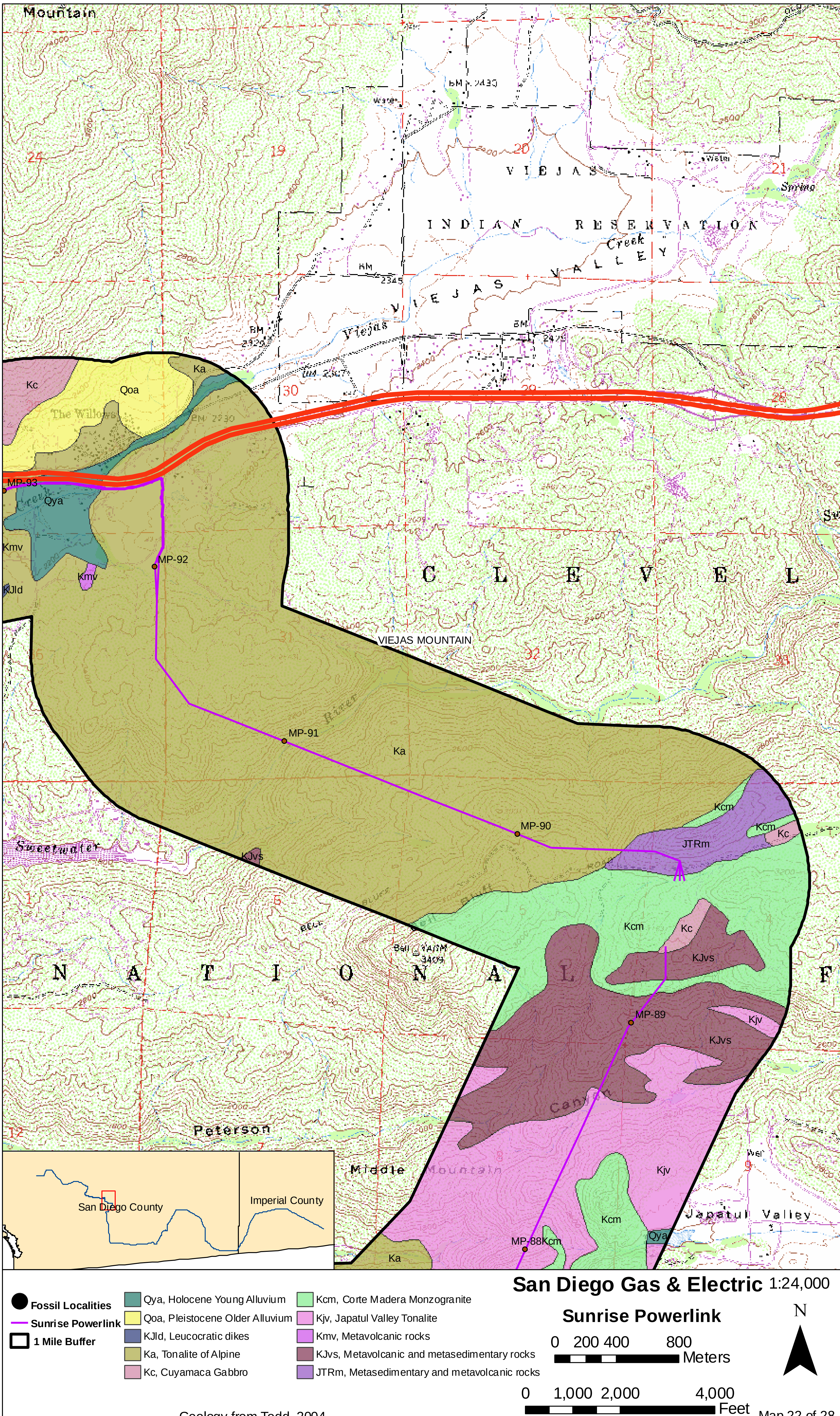
0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

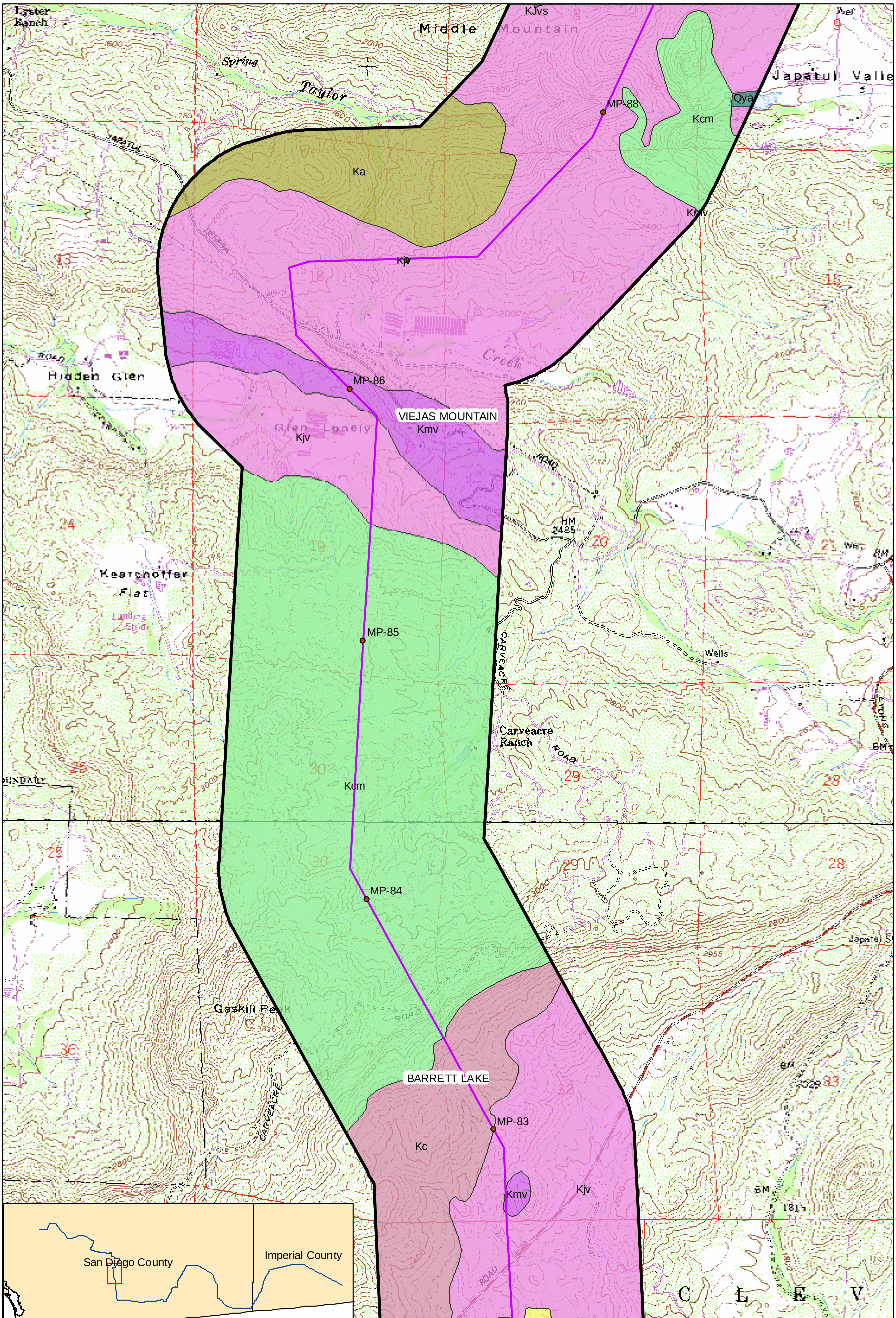
N

Geology from Todd, 2004

Map 23 of 28



Mountain
VIEJAS INDIAN RESERVATION
VIEJAS VALLEY
Viejas Creek
Kc
Qoa
Ka
Qya
Kmv
KJld
MP-93
MP-92
MP-91
MP-90
MP-89
MP-88
VIEJAS MOUNTAIN
CLEVELAND NATIONAL F
Kcm
JTRm
KJvs
Kjv
Sweetwater
Peterson
Middle Mountain
Japatul Valley
San Diego County
Imperial County
Fossil Localities
Sunrise Powerlink
1 Mile Buffer
Qya, Holocene Young Alluvium
Qoa, Pleistocene Older Alluvium
KJld, Leucocratic dikes
Ka, Tonalite of Alpine
Kc, Cuyamaca Gabbro
Kcm, Corte Madera Monzogranite
Kjv, Japatul Valley Tonalite
Kmv, Metavolcanic rocks
KJvs, Metavolcanic and metasedimentary rocks
JTRm, Metasedimentary and metavolcanic rocks
San Diego Gas & Electric
1:24,000
Sunrise Powerlink
N
0 200 400 800
Meters
0 1,000 2,000 4,000
Feet
Geology from Todd, 2004



San Diego Gas & Electric 1:24,044

Sunrise Powerlink

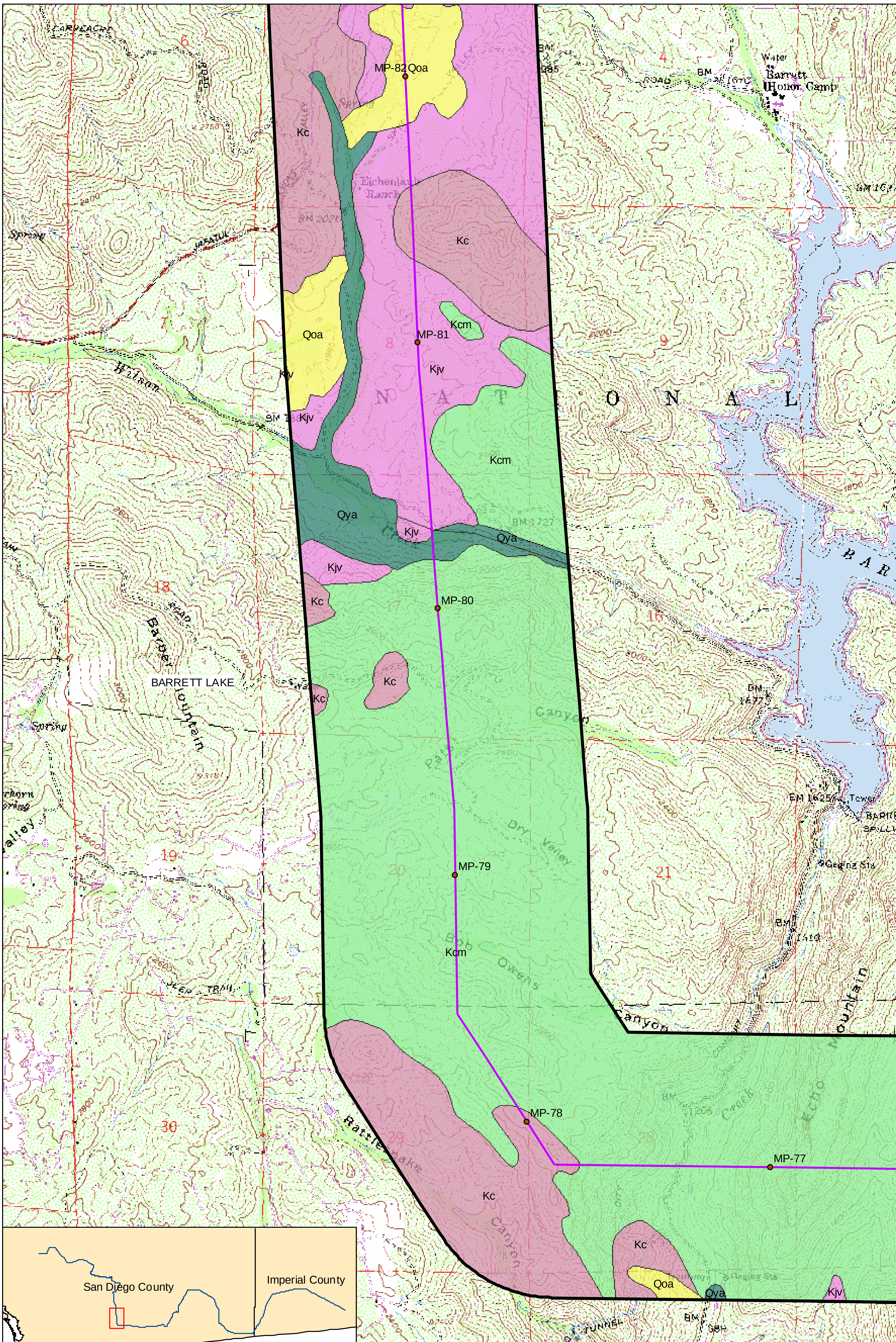
- **Fossil Localities**
- **Sunrise Powerlink**
- **1 Mile Buffer**
- Qya, Holocene Young Alluvium
- Qoa, Pleistocene Older Alluvium
- Ka, Tonalite of Alpine
- Kc, Cuyamaca Gabbro
- Kcm, Corte Madera Monzogranite
- Kjv, Japatul Valley Tonalite
- Kmv, Metavolcanic rocks
- KJvs, Metavolcanic and metasedimentary rocks

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

N

Geology from Todd, 2004



San Diego Gas & Electric 1:24,000

Sunrise Powerlink

N

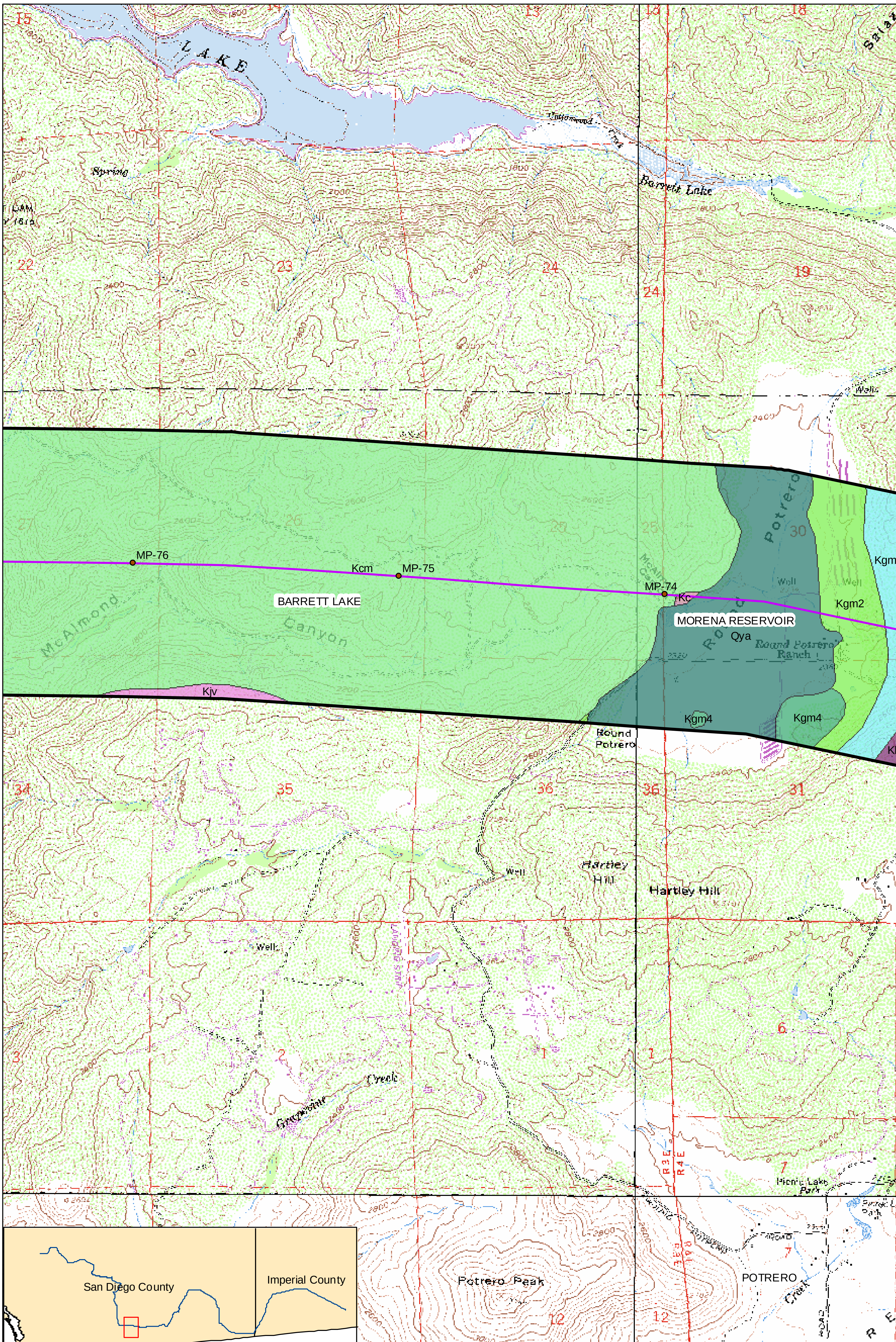
0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

- Fossil Localities
- Sunrise Powerlink
- 1 Mile Buffer

- Qya, Holocene Young Alluvium
- Qoa, Pleistocene Older Alluvium
- Kc, Cuyamaca Gabbro
- Kcm, Corte Madera Monzogranite
- Kjv, Japatul Valley Tonalite

Geology from Todd, 2004



San Diego Gas & Electric 1:24,000

Sunrise Powerlink

N

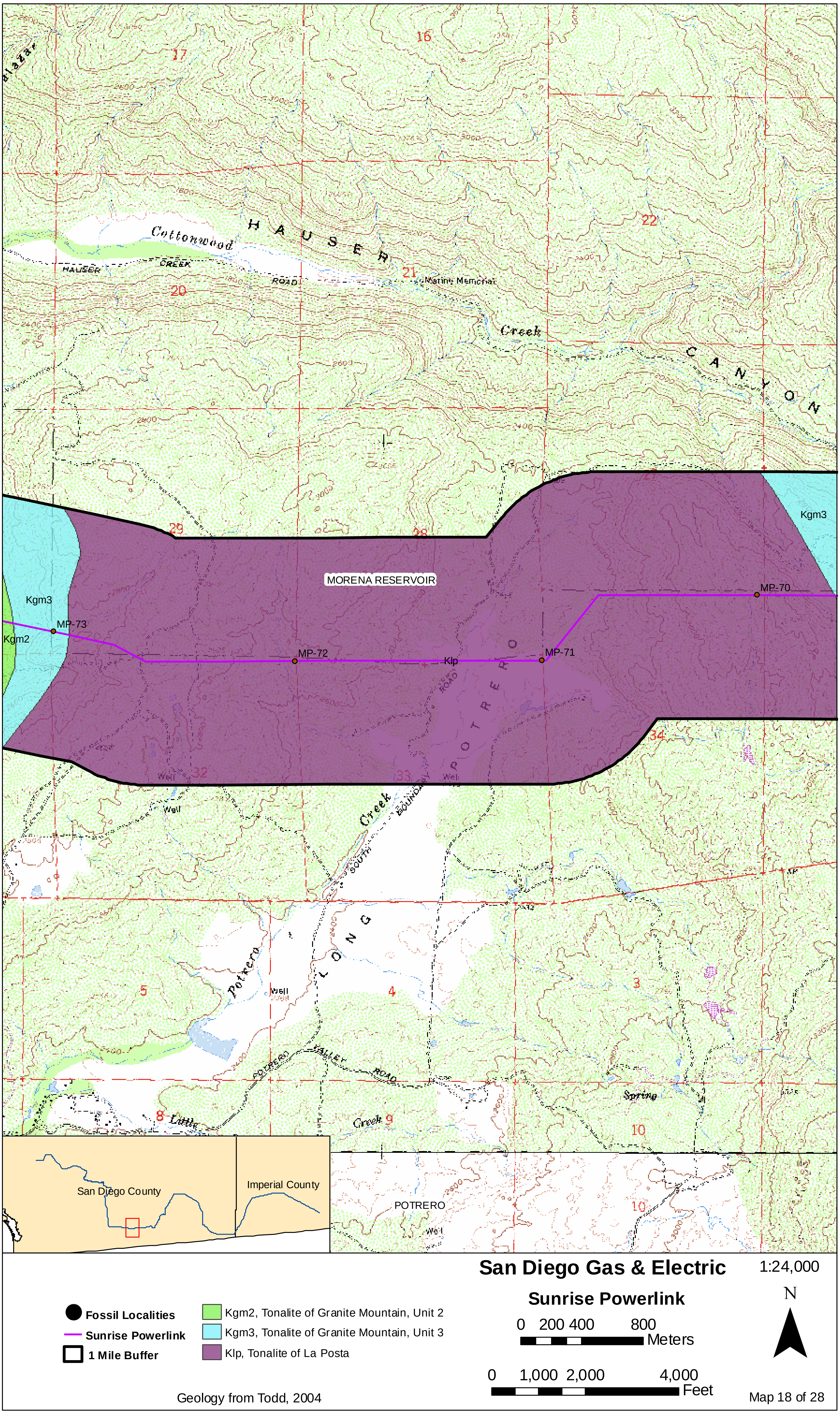
0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

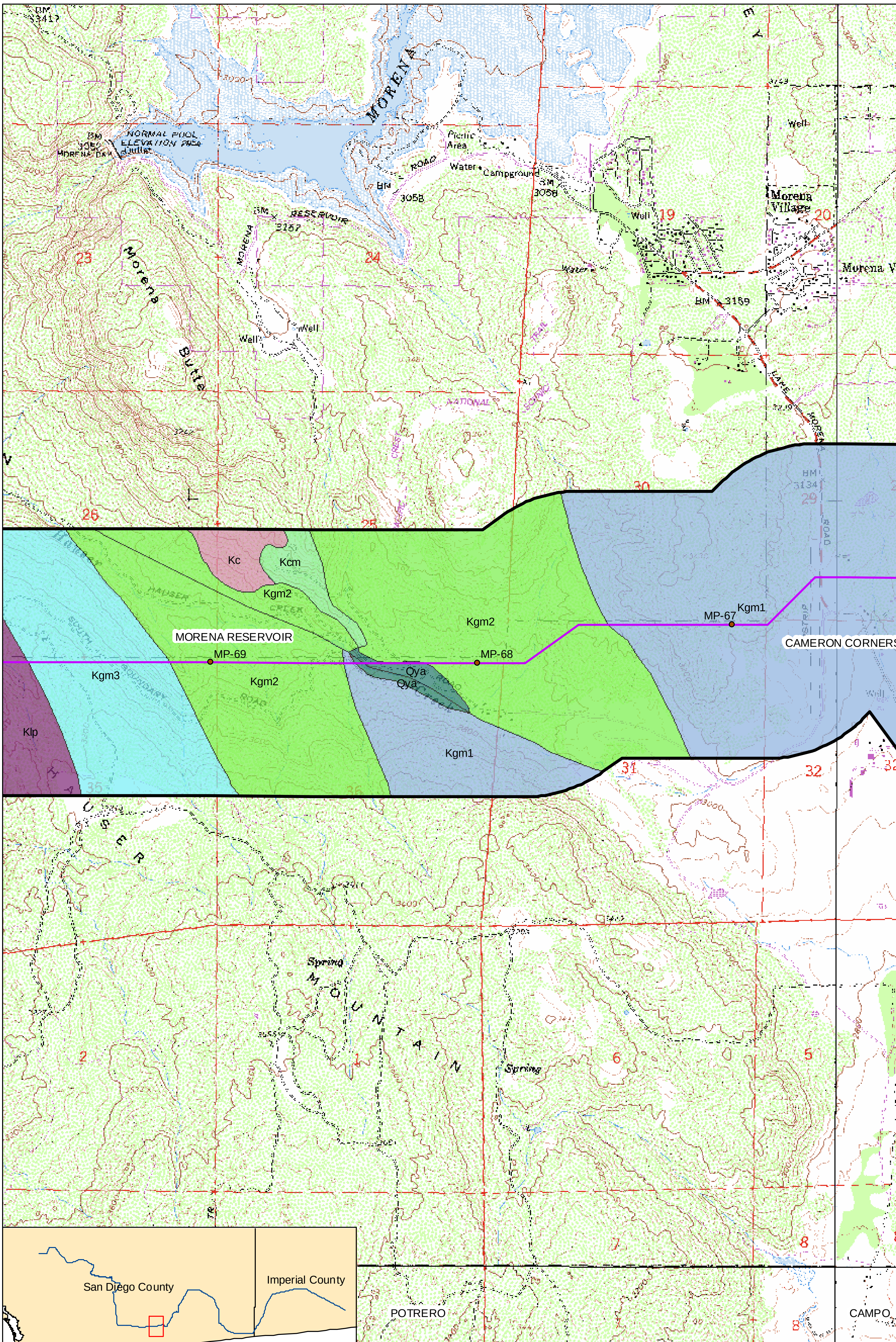
- Fossil Localities
- Sunrise Powerlink
- 1 Mile Buffer

- Qya, Holocene Young Alluvium
- Kc, Cuyamaca Gabbro
- Kcm, Corte Madera Monzogranite
- Kgm2, Tonalite of Granite Mountain, Unit 2
- Kgm3, Tonalite of Granite Mountain, Unit 3
- Kgm4, Tonalite of Granite Mountain, Unit 4
- Kjv, Japatul Valley Tonalite
- Klp, Tonalite of La Posta

Geology from Todd, 2004



Kgm3
MORENA RESERVOIR
MP-70
Kgm3
MP-73
Kgm2
MP-72
Klp
MP-71
San Diego County
Imperial County
POTRERO
San Diego Gas & Electric
Sunrise Powerlink
1:24,000
N
Fossil Localities
Sunrise Powerlink
1 Mile Buffer
Kgm2, Tonalite of Granite Mountain, Unit 2
Kgm3, Tonalite of Granite Mountain, Unit 3
Klp, Tonalite of La Posta
0 200 400 800
Meters
0 1,000 2,000 4,000
Feet
Geology from Todd, 2004



Fossil Localities

Sunrise Powerlink

1 Mile Buffer

Qya, Holocene Young Alluvium

Kc, Cuyamaca Gabbro

Kcm, Corte Madera Monzogranite

Kgm1, Tonalite of Granite Mountain, Unit 1

Kgm2, Tonalite of Granite Mountain, Unit 2

Kgm3, Tonalite of Granite Mountain, Unit 3

Klp, Tonalite of La Posta

Geology from Todd, 2004

San Diego Gas & Electric

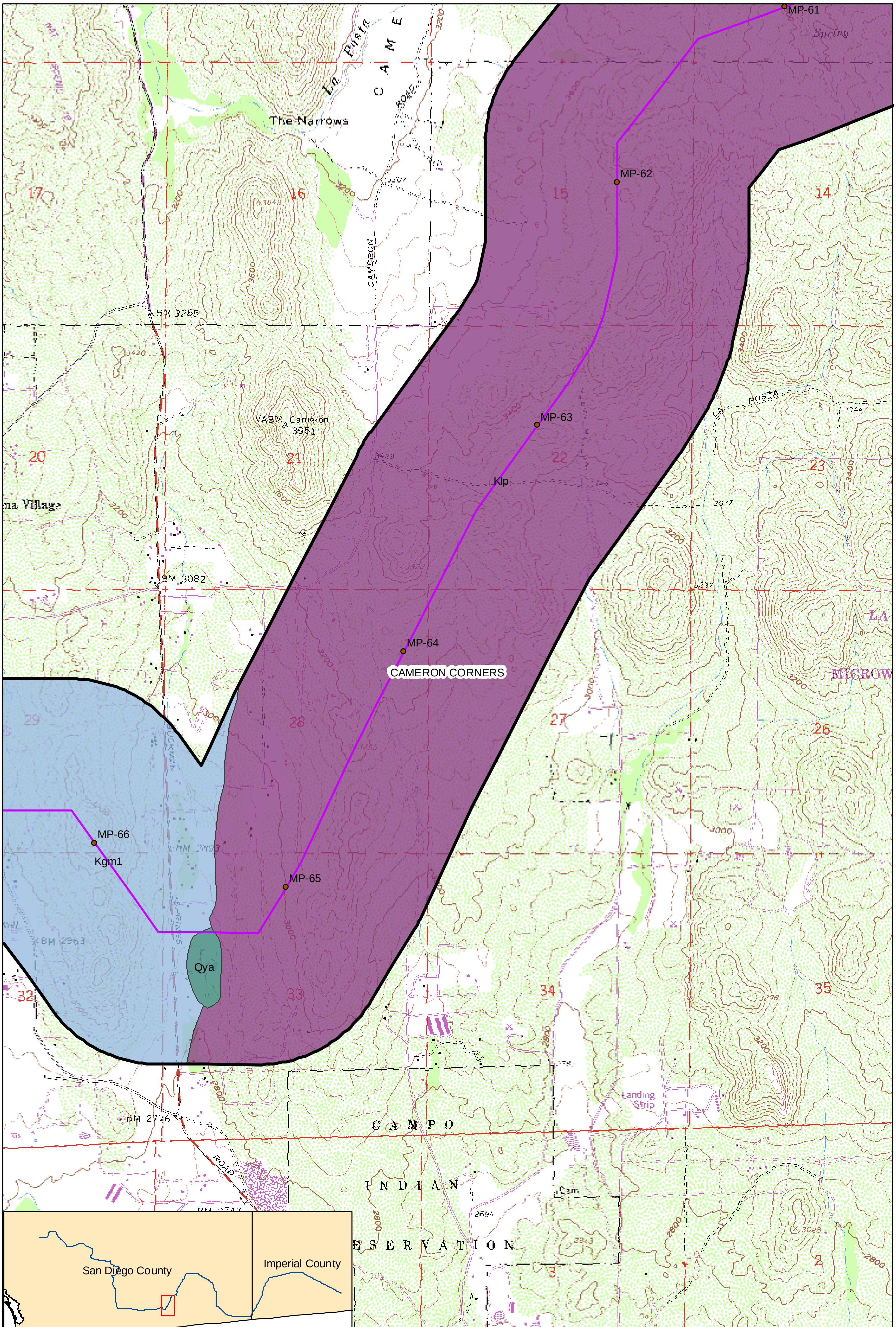
Sunrise Powerlink

1:24,000

N

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet



Fossil Localities
Sunrise Powerlink
1 Mile Buffer

Qya, Holocene Young Alluvium
Kgm1, Tonalite of Granite Mountain, Unit 1
Klp, Tonalite of La Posta

Geology from Todd, 2004

San Diego Gas & Electric

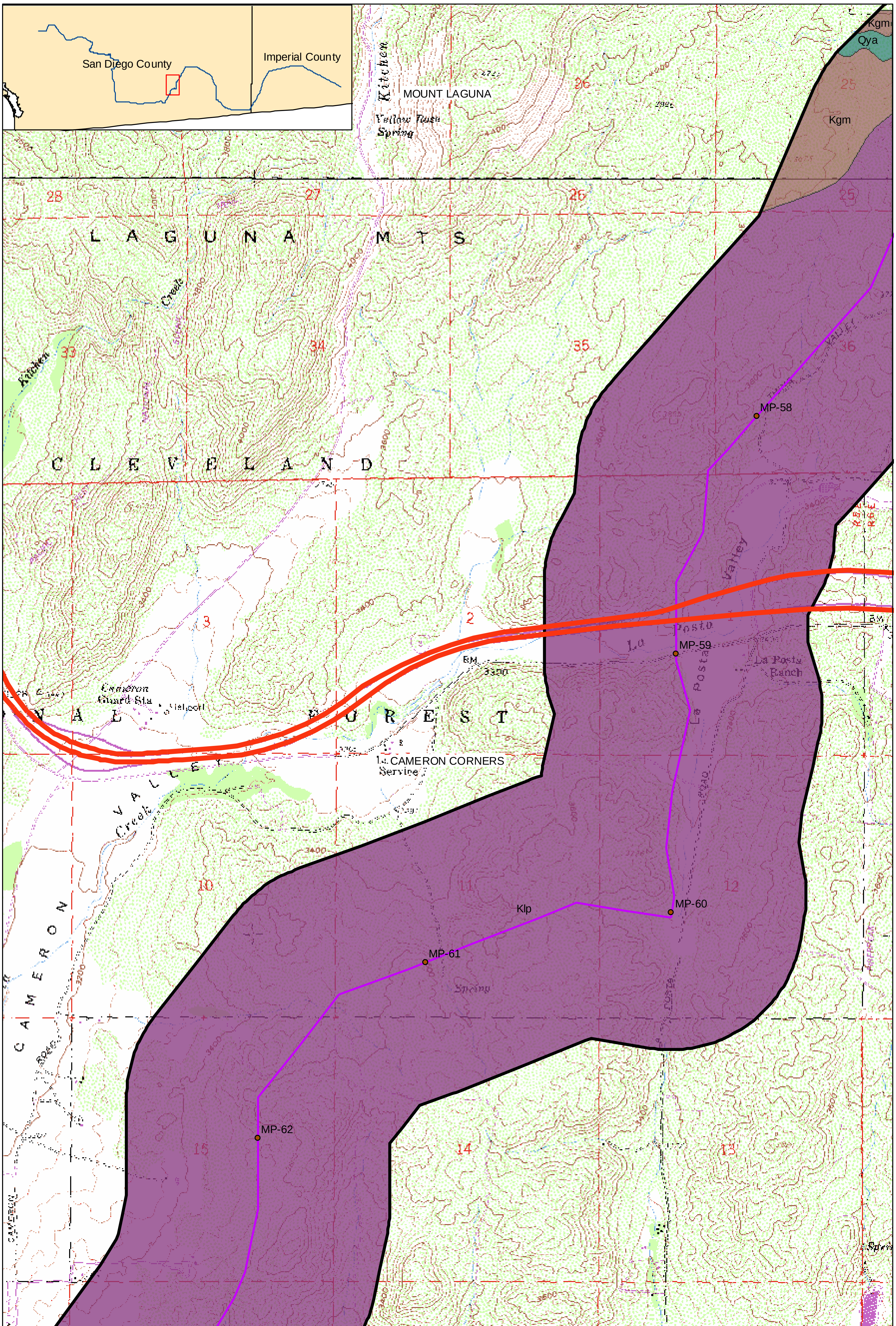
Sunrise Powerlink

1:24,000

N

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet



San Diego Gas & Electric

Sunrise Powerlink

1:24,000

N

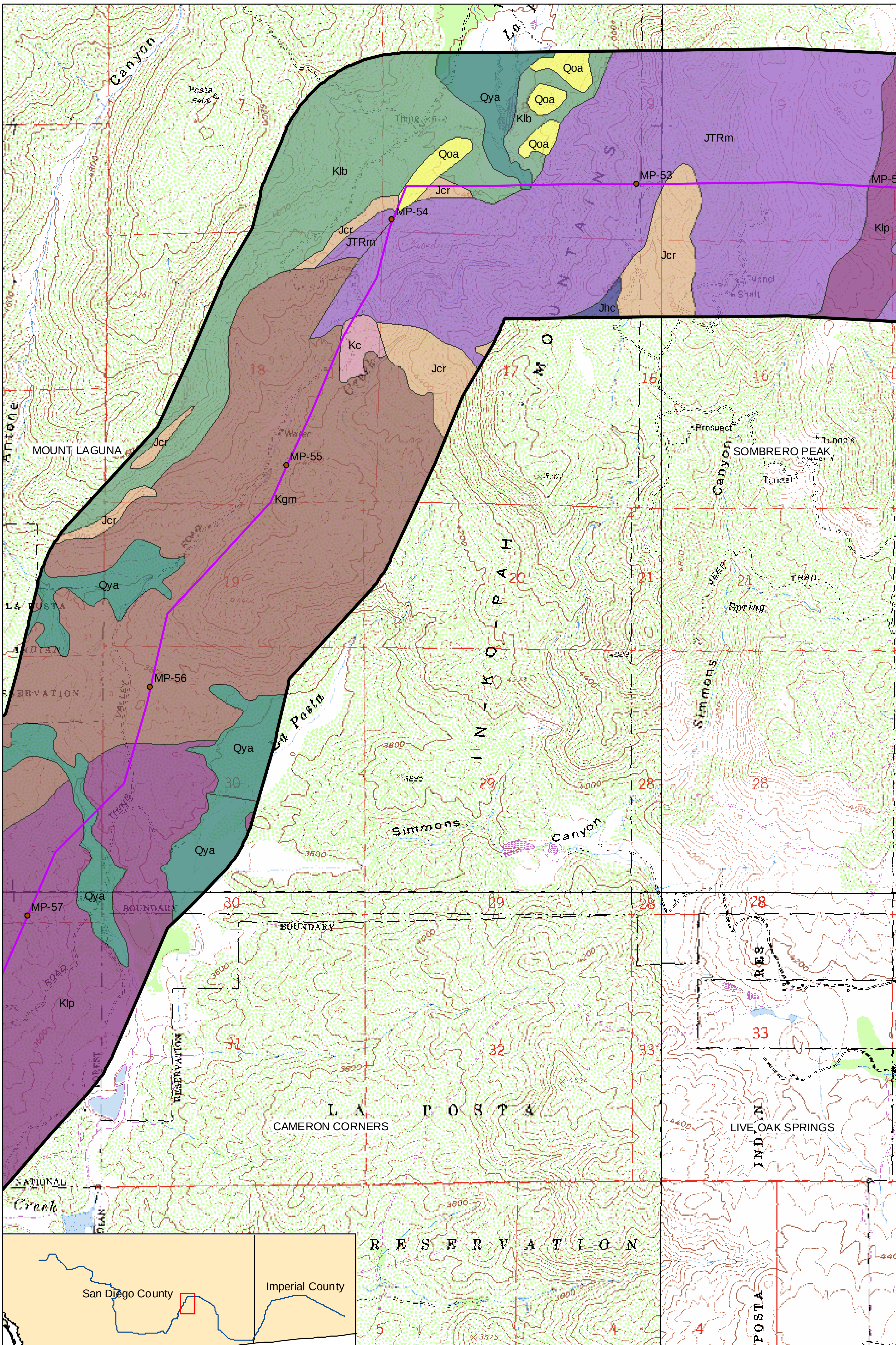
0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

● **Fossil Localities**
Sunrise Powerlink
1 Mile Buffer

Qya, Holocene Young Alluvium
Kgm, Tonalite of Granite Mountain
Klp, Tonalite of La Posta

Geology from Todd, 2004



San Diego Gas & Electric 1:24,000

Sunrise Powerlink

- Fossil Localities
- Sunrise Powerlink
- 1 Mile Buffer

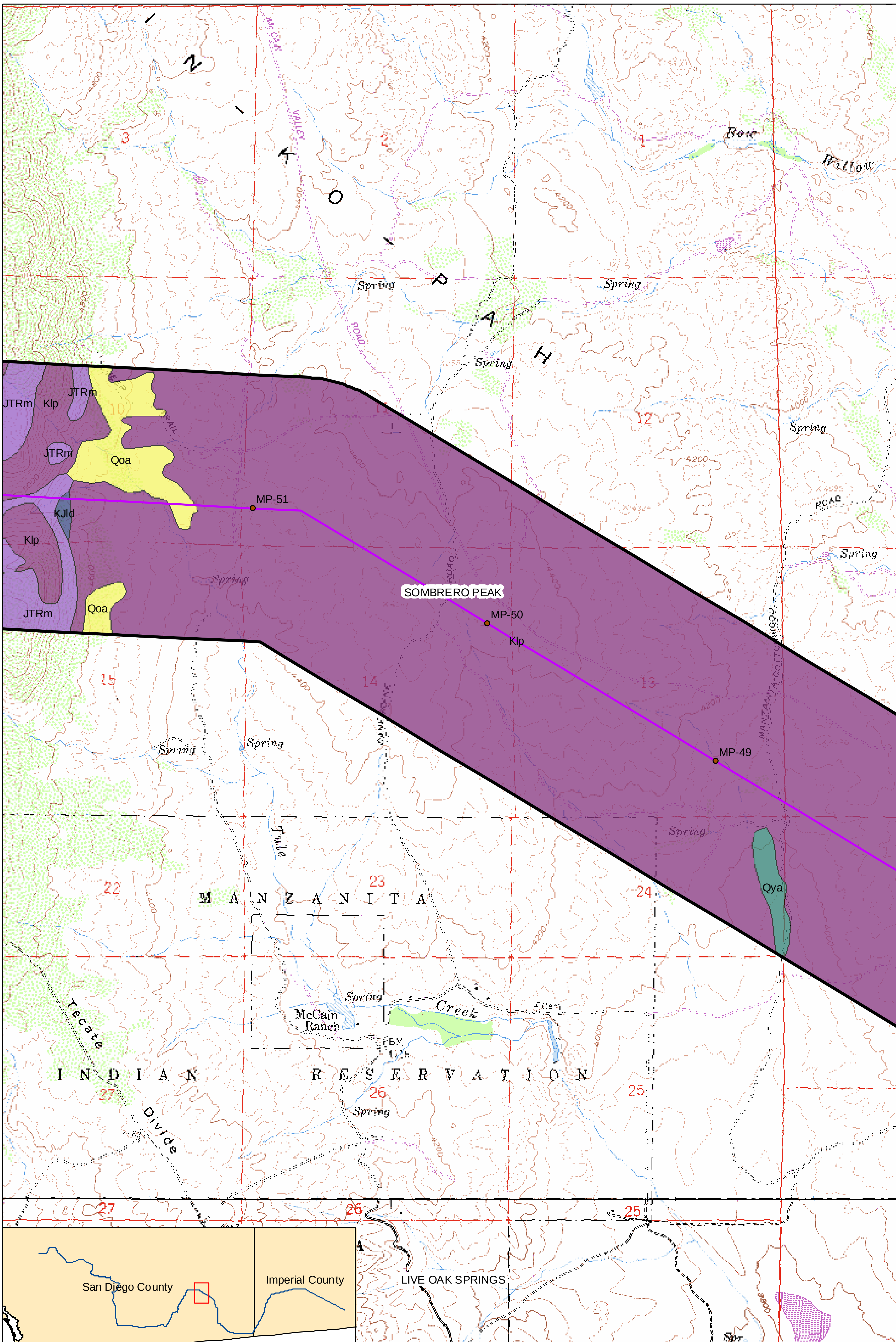
- Qya, Holocene Young Alluvium
- Qoa, Pleistocene Older Alluvium
- Kc, Cuyamaca Gabbro
- Kgm, Tonalite of Granite Mountain
- Klb, Tonalite of Las Bancas
- Klp, Tonalite of La Posta
- Jhc, Gneiss of Harper Creek
- Jcr, Granodiorite of Cuyamaca Reservoir
- JTRm, Metasedimentary and metavolcanic rocks

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

N

Geology from Todd, 2004



Fossil Localities
Sunrise Powerlink
1 Mile Buffer

- Qya, Holocene Young Alluvium
- Qoa, Pleistocene Older Alluvium
- KJld, Leucocratic dikes
- Klp, Tonalite of La Posta
- JTRm, Metasedimentary and metavolcanic rocks

Geology from Todd, 2004

San Diego Gas & Electric

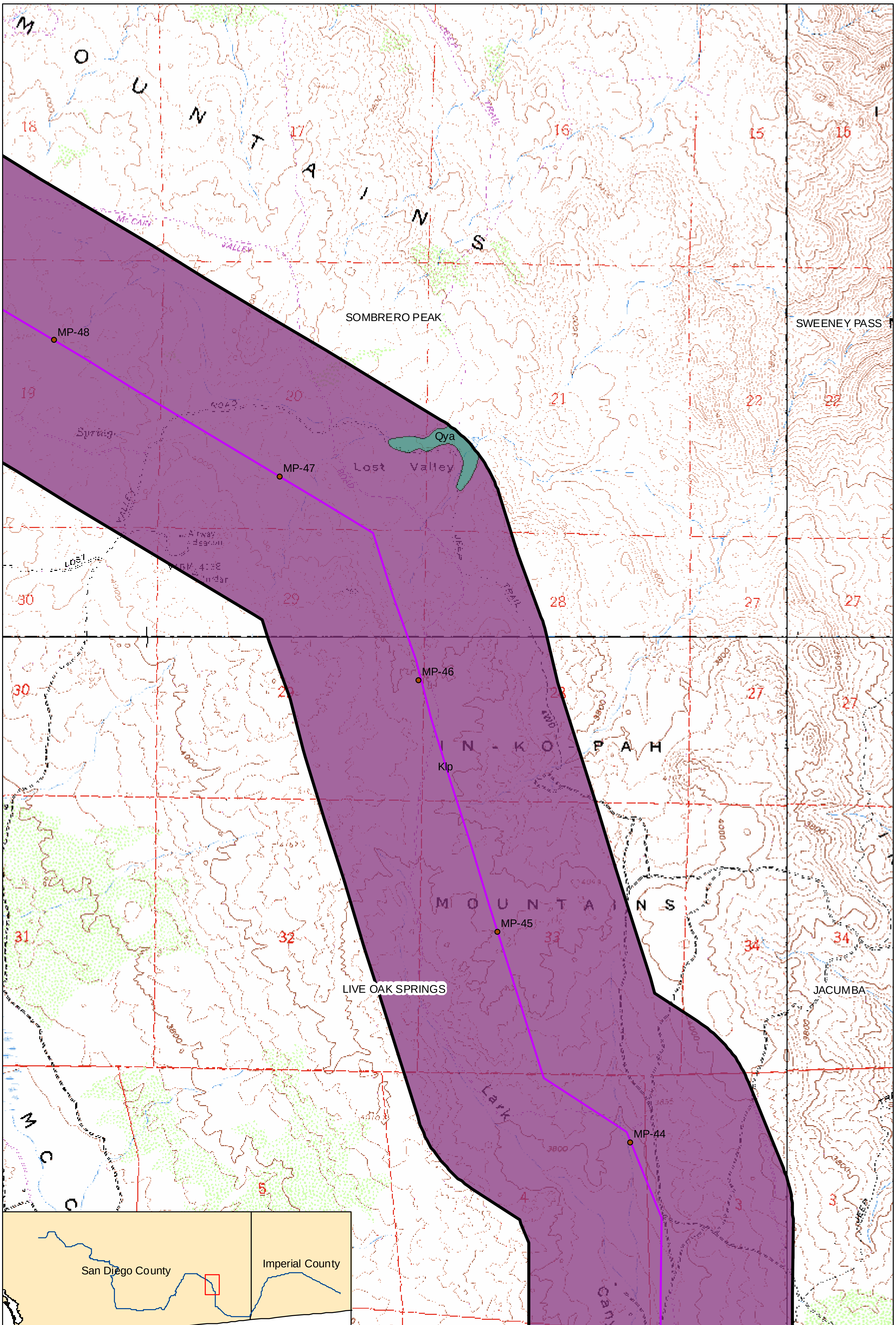
Sunrise Powerlink

1:24,000

N

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet



- Fossil Localities
- Sunrise Powerlink
- 1 Mile Buffer
- Qya, Holocene Young Alluvium
- Klp, Tonalite of La Posta

Geology from Todd, 2004

San Diego Gas & Electric

Sunrise Powerlink

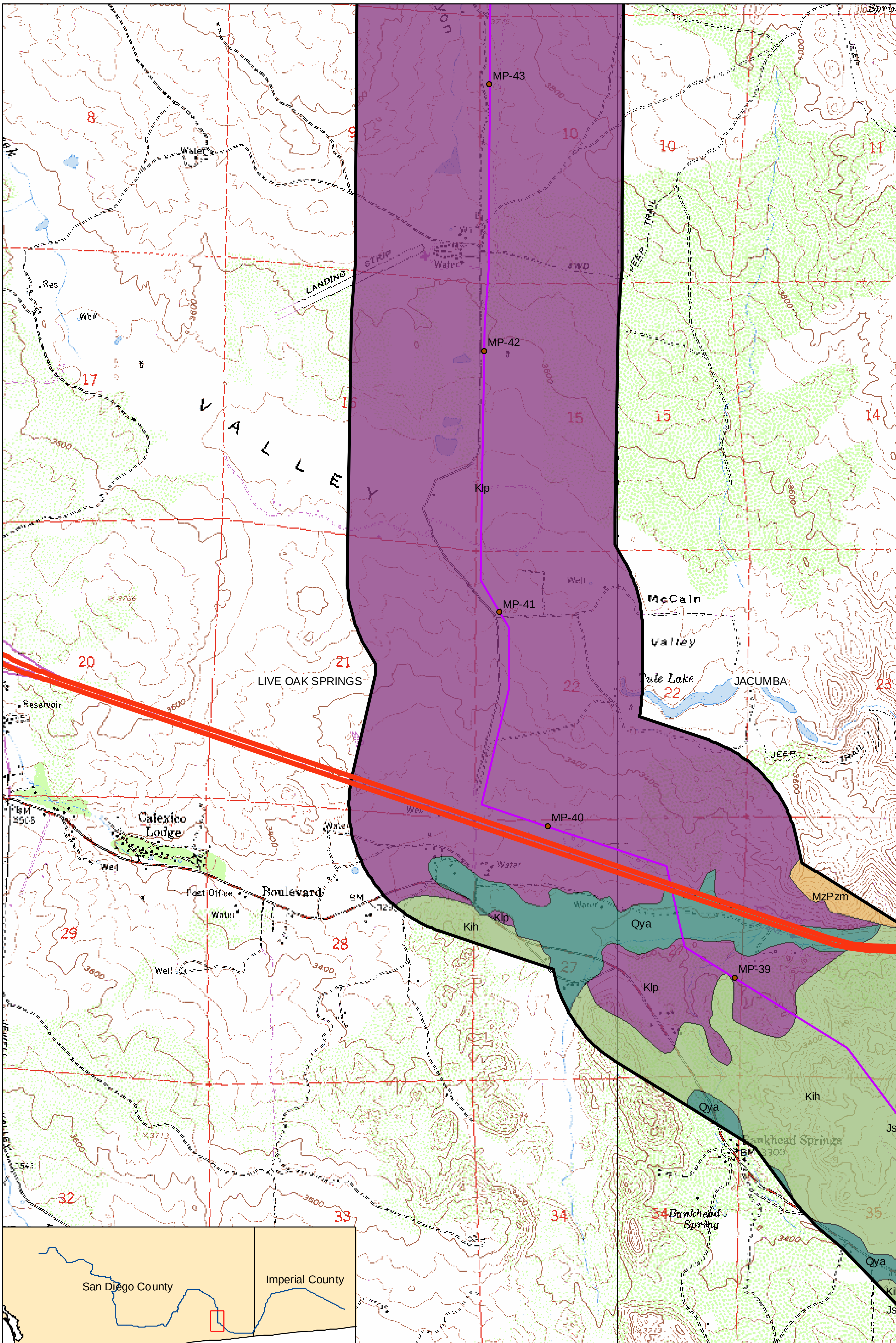
1:24,000

N

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

Map 12 of 28



● **Fossil Localities**
Sunrise Powerlink
1 Mile Buffer

Qya, Holocene Young Alluvium
Kih, Indian Hill granodiorite of Parrish and others (19
Klp, Tonalite of La Posta
Jsp, Migmatitic schist and gneiss of Stephenson Peak
MzPzm, Rocks of Jacumba Mountains

Geology from Todd, 2004

San Diego Gas & Electric

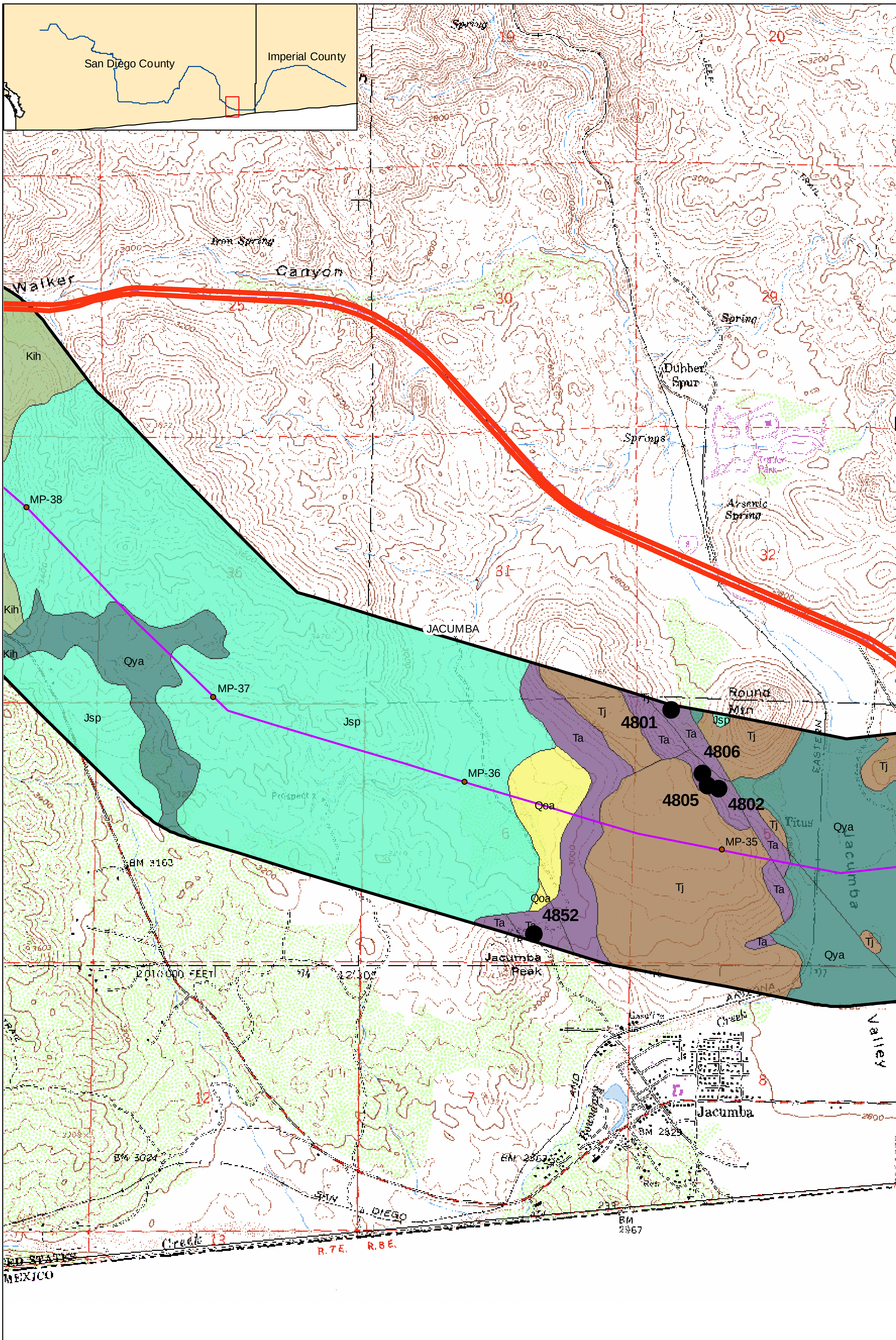
Sunrise Powerlink

1:24,000

N

0 212.5425 850 Meters

0 1,050 2,100 4,200 Feet



● **Fossil Localities**

Sunrise Powerlink

1 Mile Buffer

Qya, Holocene Young Alluvium

Qoa, Pleistocene Older Alluvium

Ta, Anza Formation

Tj, Jacumba Volcanics

Kih, Indian Hill granodiorite of Parrish and others (19

Jsp, Migmatitic schist and gneiss of Stephenson Peak

MzPzm, Rocks of Jacumba Mountains

Geology from Todd, 2004

San Diego Gas & Electric

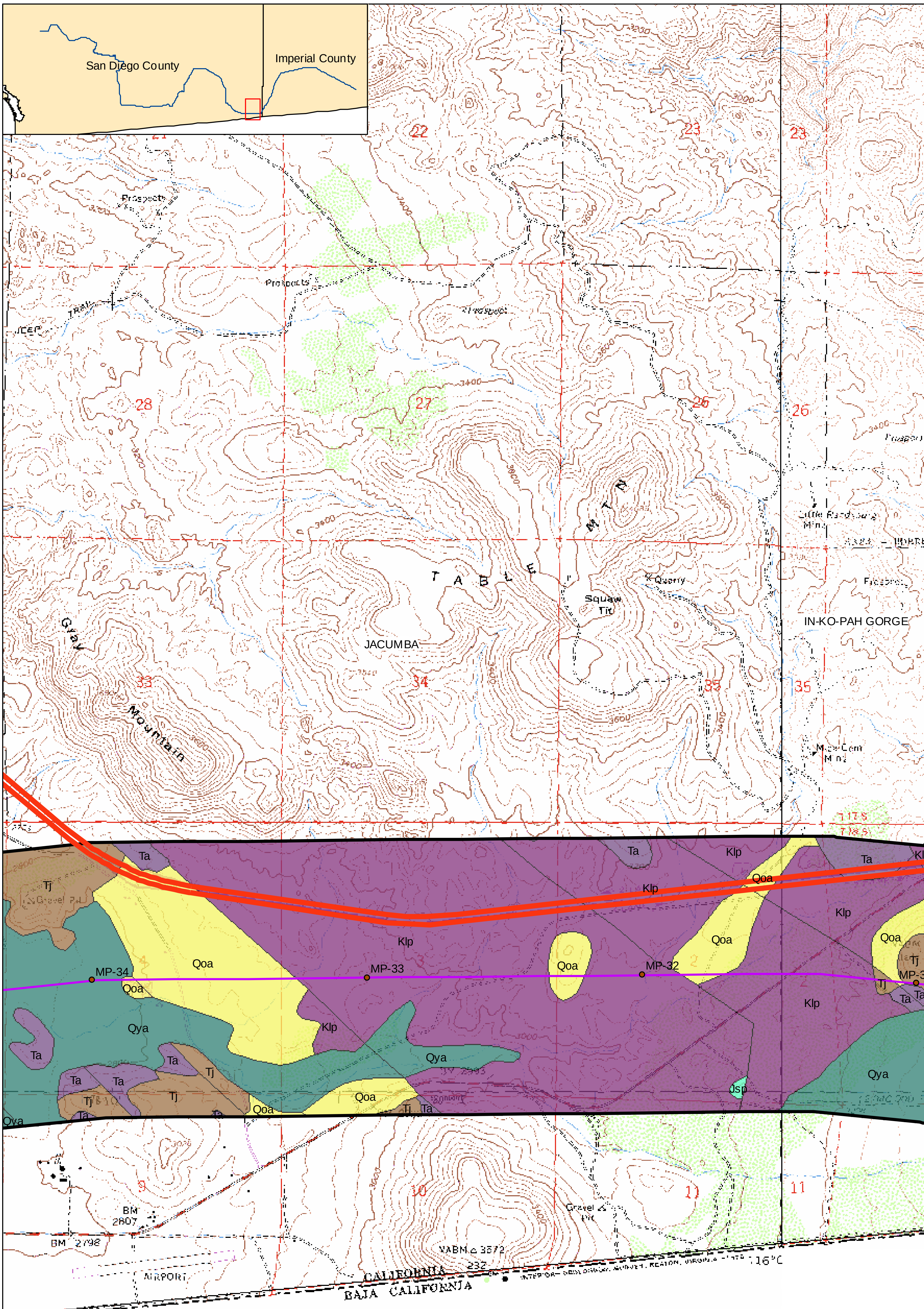
Sunrise Powerlink

1:24,000

N

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet



● Fossil Localities
Sunrise Powerlink
1 Mile Buffer

Qya, Holocene Young Alluvium
Qoa, Pleistocene Older Alluvium
Ta, Anza Formation
Tj, Jacumba Volcanics
Klp, Tonalite of La Posta
Jsp, Migmatitic schist and gneiss of Stephenson Peak

Geology from Todd, 2004

San Diego Gas & Electric

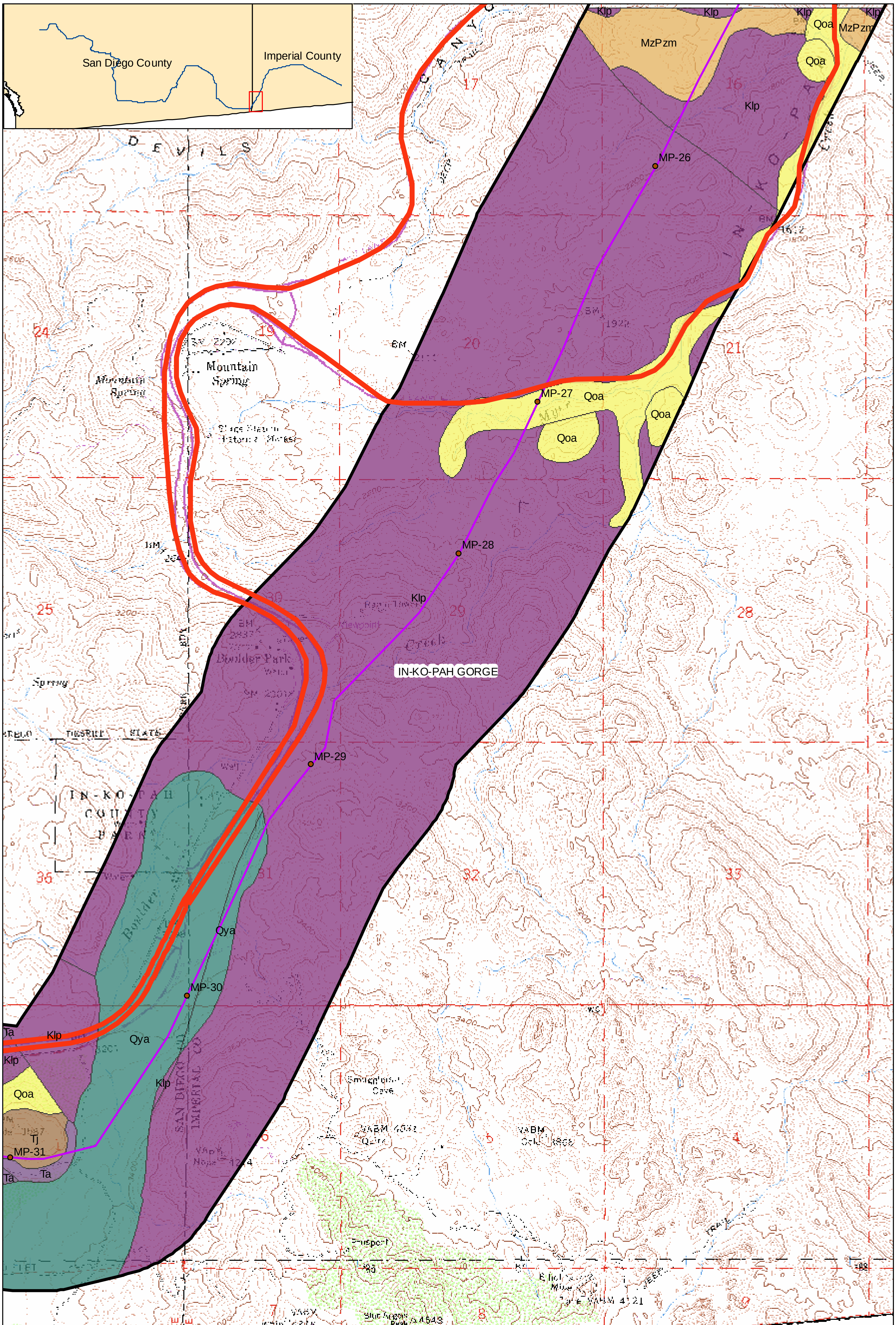
Sunrise Powerlink

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

1:24,000

N



● Fossil Localities
Sunrise Powerlink
1 Mile Buffer

Geology from Todd, 2004

	Qya, Holocene Young Alluvium
	Qoa, Pleistocene Older Alluvium
	Ta, Anza Formation
	Tj, Jacumba Volcanics
	Klp, Tonalite of La Posta
	MzPzm, Rocks of Jacumba Mountains

San Diego Gas & Electric

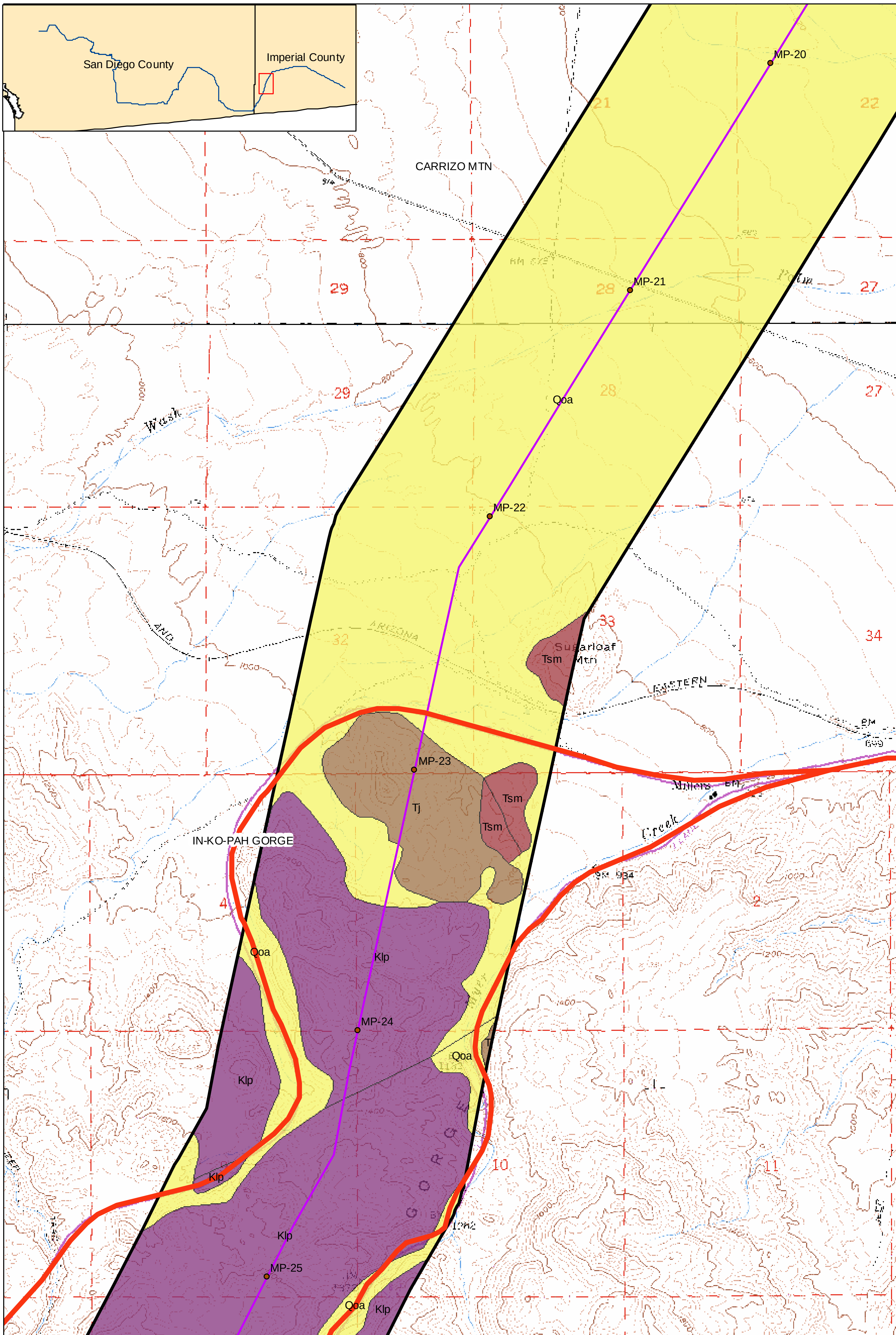
Sunrise Powerlink

1:24,000

N

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet



● Fossil Localities
Sunrise Powerlink
1 Mile Buffer

- Qoa, Pleistocene Older Alluvium
- Tsm, Split Mountain Formation
- Tj, Jacumba Volcanics
- Klp, Tonalite of La Posta
- MzPzm, Rocks of Jacumba Mountains

Geology from Todd, 2004

San Diego Gas & Electric

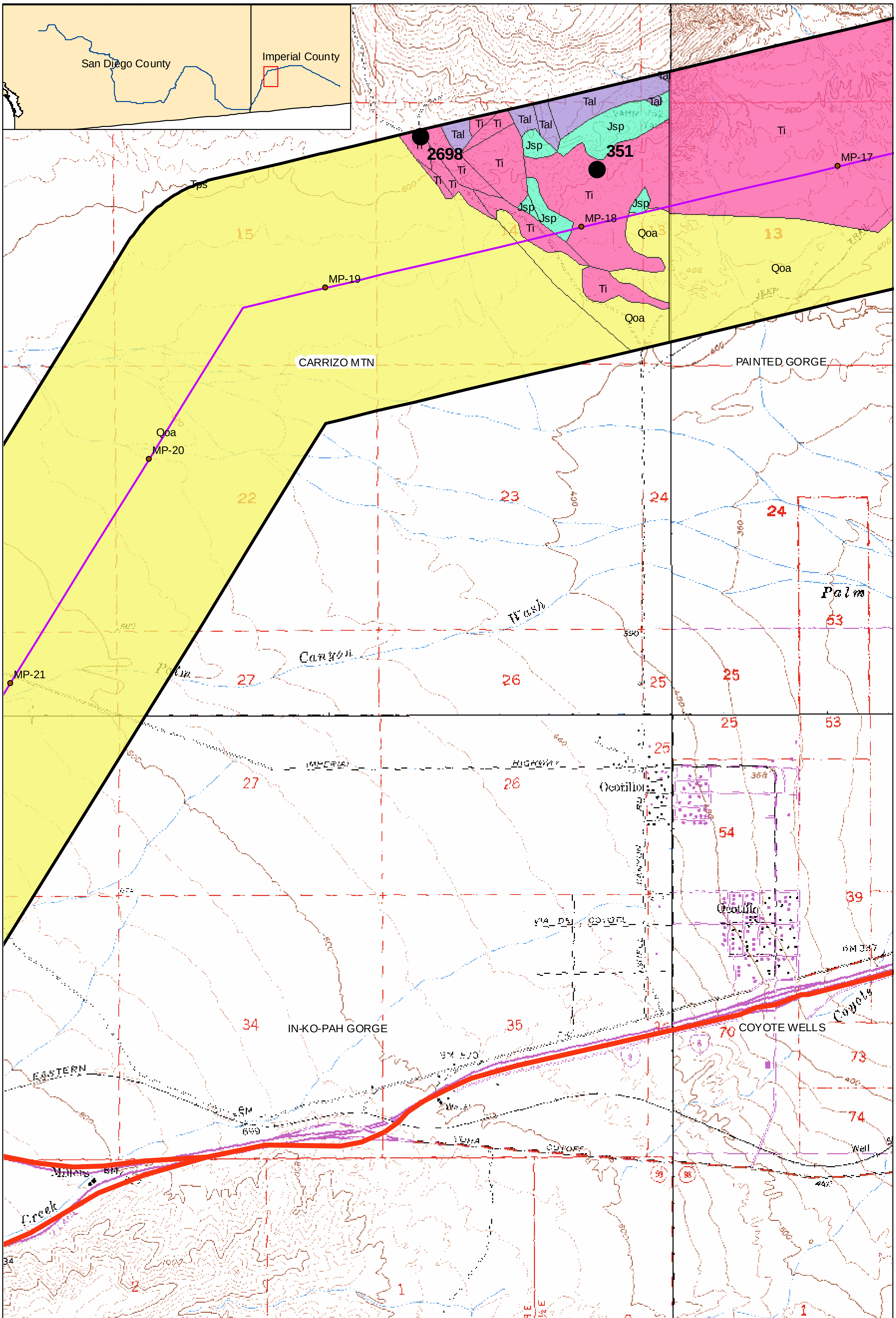
Sunrise Powerlink

1:24,000

N

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet



Fossil Localities
Sunrise Powerlink
1 Mile Buffer

Qoa, Pleistocene Older Alluvium
Tps, Palm Spring Group
Ti, Imperial Formation
Tal, Alverson Andesite
Jsp, Migmatitic schist and gneiss of Stephenson Peak

Geology from Todd, 2004 and Ludington et al., 2005

San Diego Gas & Electric

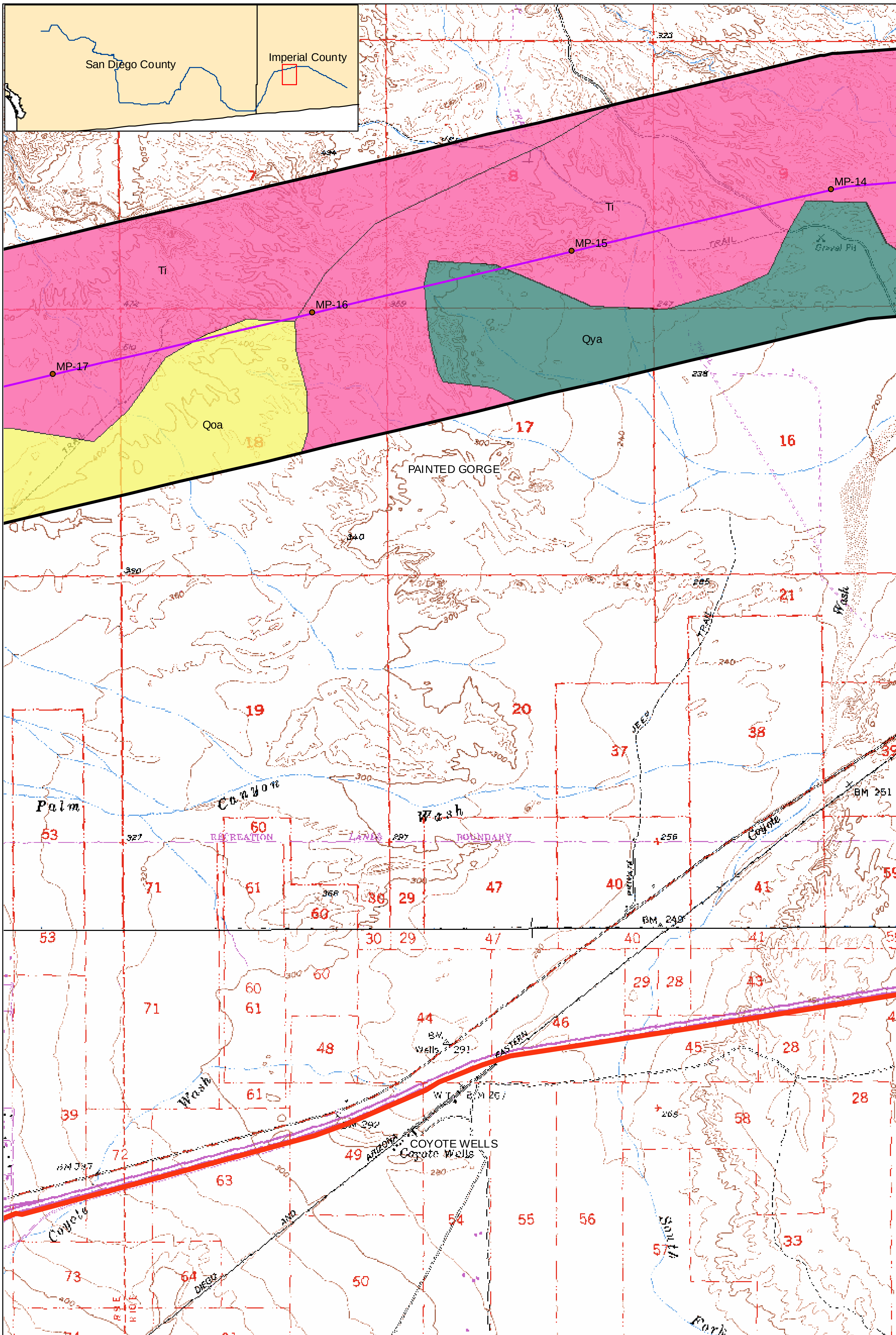
Sunrise Powerlink

1:24,000

N

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet



San Diego Gas & Electric

1:24,000

Sunrise Powerlink

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

N

Fossil Localities

Sunrise Powerlink

1 Mile Buffer

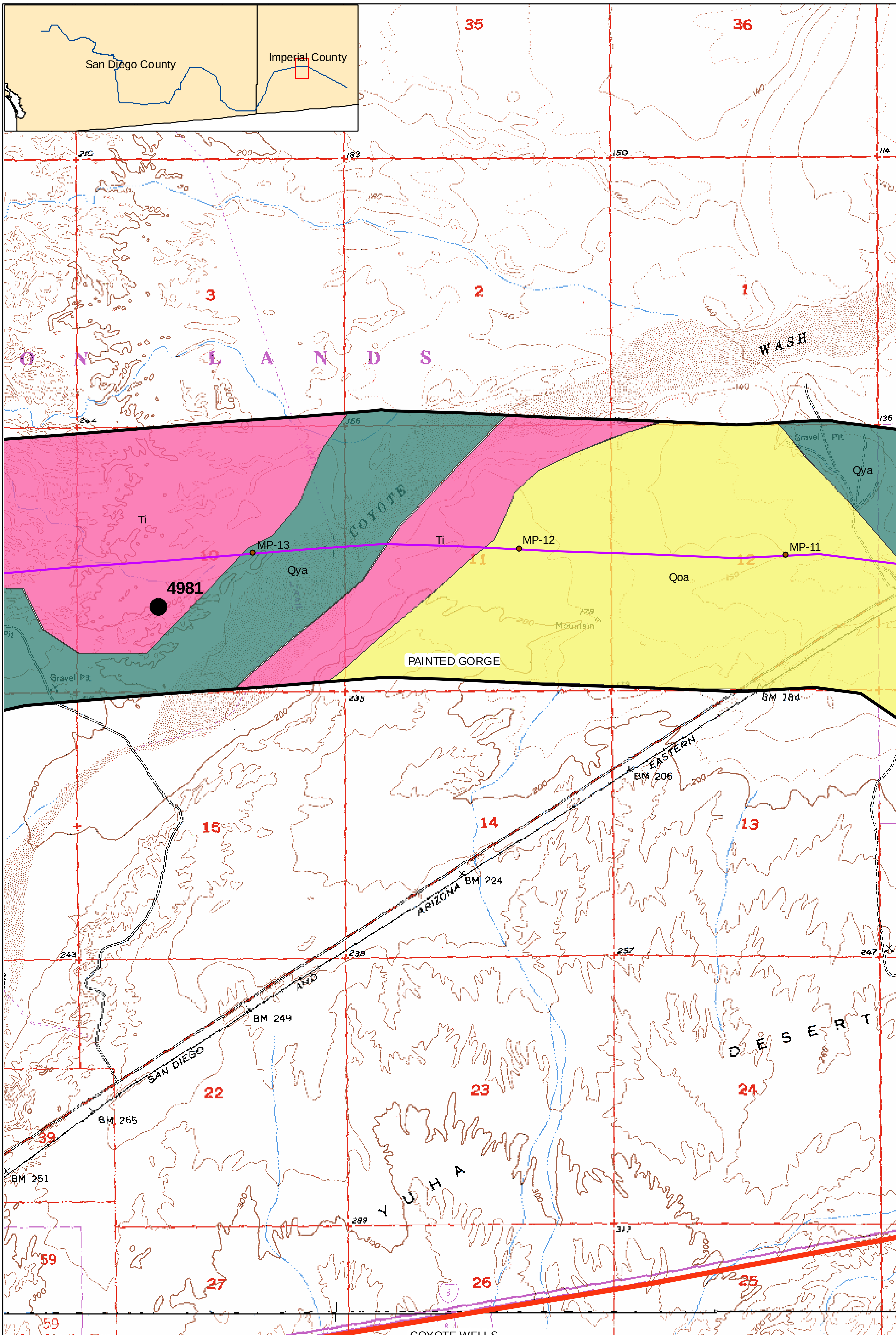
Qya, Holocene Young Alluvium

Qoa, Pleistocene Older Alluvium

Tps, Palm Spring Group

Ti, Imperial Formation

Geology from Ludington et al., 2005



San Diego Gas & Electric

Sunrise Powerlink

1:24,000

N

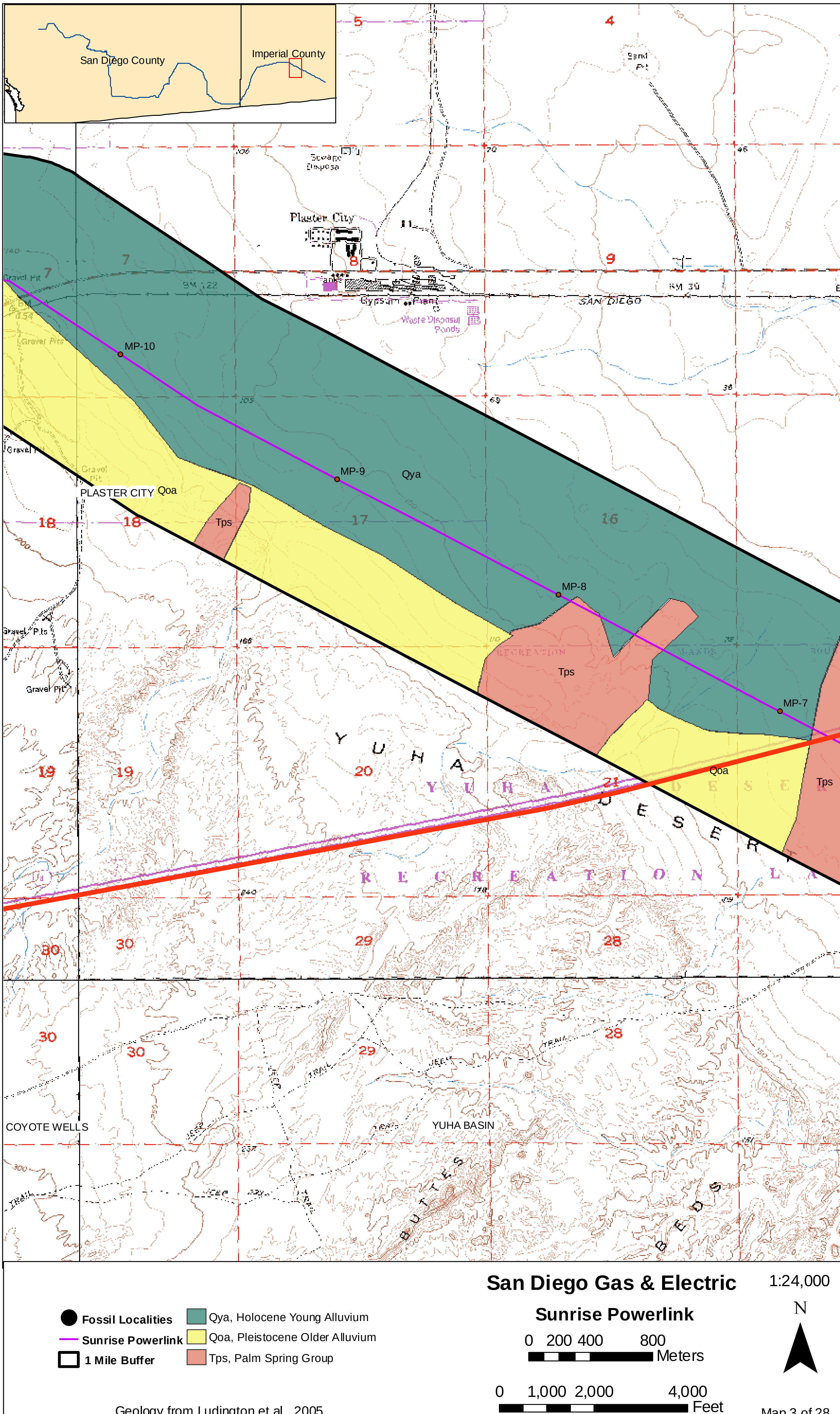
Fossil Localities
Sunrise Powerlink
1 Mile Buffer

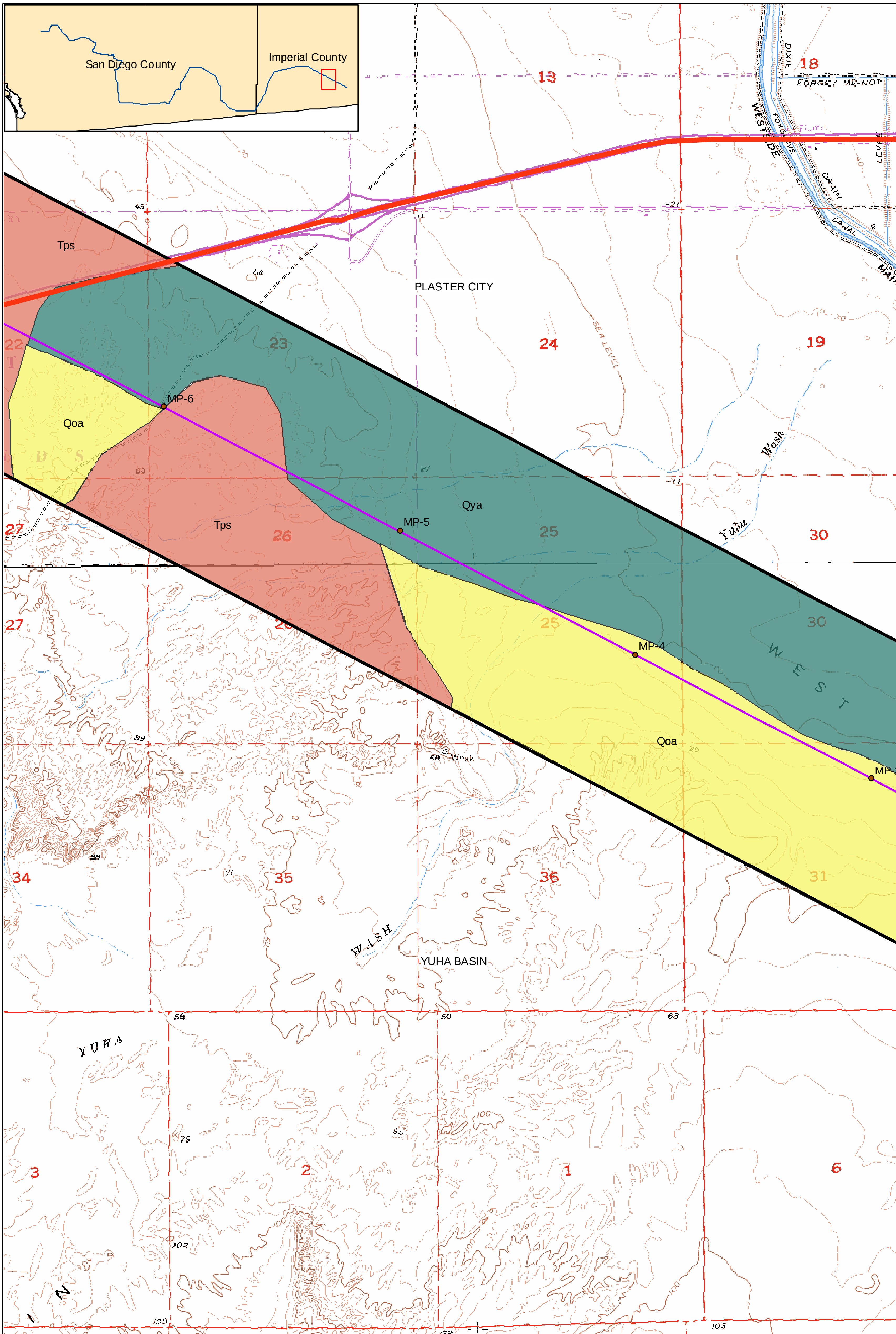
Qya, Holocene Young Alluvium
Qoa, Pleistocene Older Alluvium
Ti, Imperial Formation

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

Geology from Ludington et al., 2005


San Diego County
Imperial County
Plaster City
Gypsum Plant
Waste Disposal Ponds
SAN DIEGO
MP-10
MP-9
MP-8
MP-7
Qya
Qoa
Tps
PLASTER CITY
YUHA DESERT
RECREATION
COYOTE WELLS
YUHA BASIN
San Diego Gas & Electric
Sunrise Powerlink
1:24,000
N
Fossil Localities
Sunrise Powerlink
1 Mile Buffer
Qya, Holocene Young Alluvium
Qoa, Pleistocene Older Alluvium
Tps, Palm Spring Group
0 200 400 800
Meters
0 1,000 2,000 4,000
Feet
Geology from Ludington et al., 2005
Map 3 of 28



San Diego Gas & Electric

1:24,000

Sunrise Powerlink

N

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

● Fossil Localities

Sunrise Powerlink

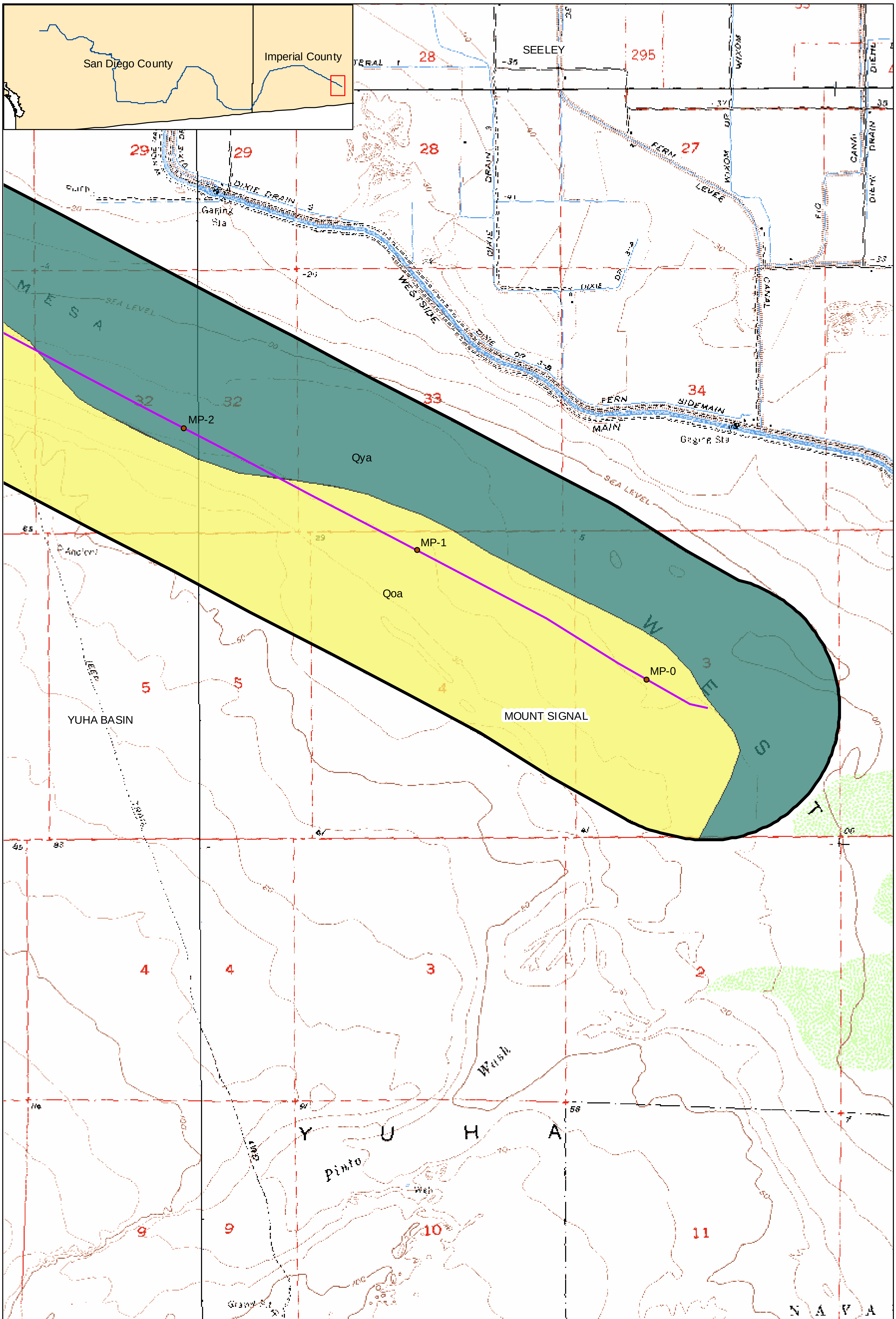
1 Mile Buffer

Qya, Holocene Young Alluvium

Qoa, Pleistocene Older Alluvium

Tps, Palm Spring Group

Geology from Ludington et al., 2005



San Diego Gas & Electric

Sunrise Powerlink

1:24,000

N

0 200 400 800 Meters

0 1,000 2,000 4,000 Feet

Fossil Localities

Sunrise Powerlink

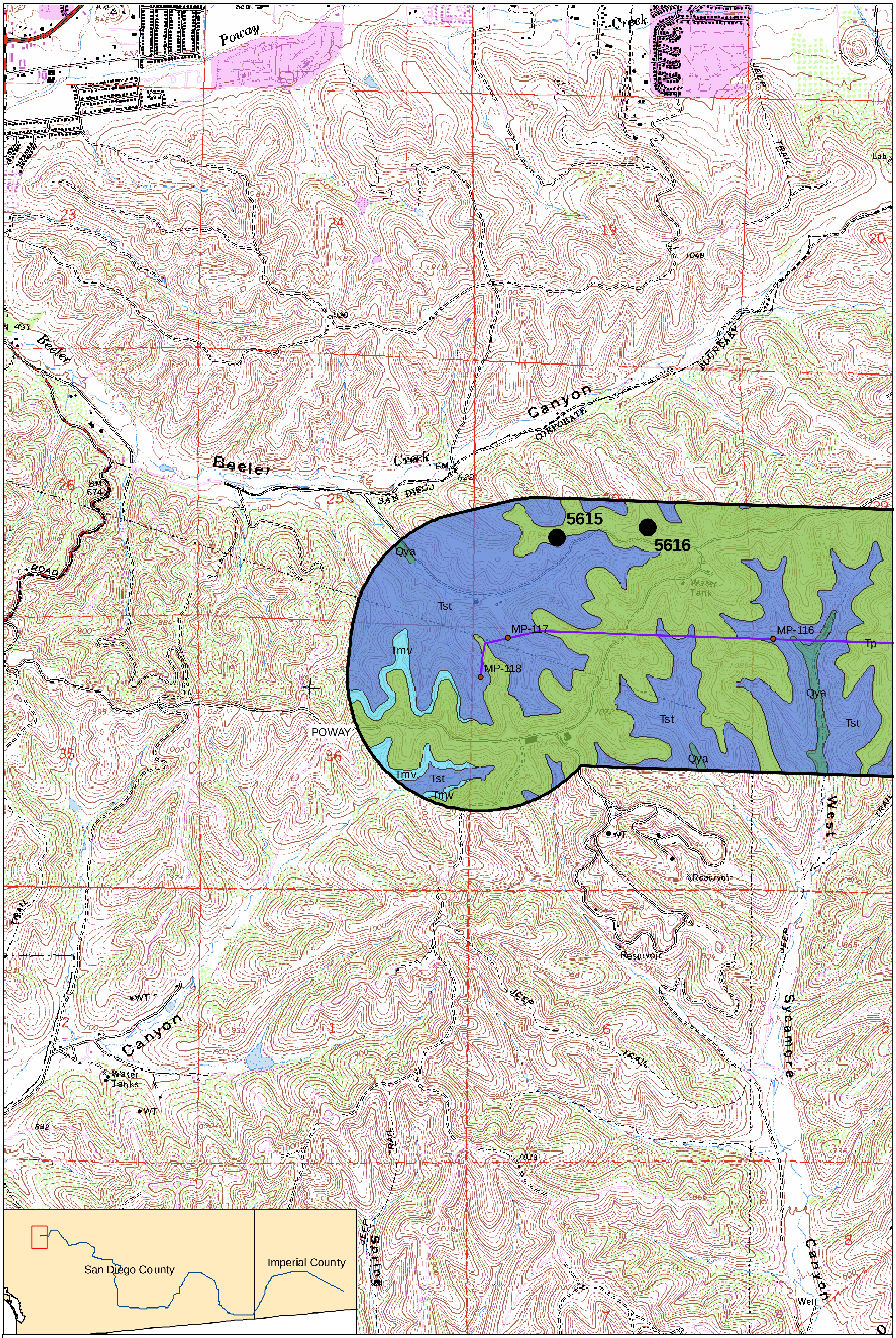
1 Mile Buffer

Qya, Holocene Young Alluvium

Qoa, Pleistocene Older Alluvium

Geology from Ludington et al., 2005

Map 1 of 28



● **Fossil Localities**	Qya, Young alluvial flood plain deposits
Sunrise Powerlink	Tmv, Mission Valley Formation
1 Mile Buffer	Tp, Pomerado Conglomerate
	Tst, Stadium Conglomerate

Geology from Todd, 2004 and Kennedy and Tan, 2005

1:24,000

San Diego Gas & Electric

Sunrise Powerlink

0 200 400 800 Meters

0 1,050 2,100 4,200 Feet

N

Appendix B

SDNHM Paleontological Localities

NUMBER	---LOCALITY NAME AND GEOGRAPHIC LOCATION---	----------ROCK AND TIME UNITS-ROCK TYPE-FIELD NOTES----------	-----------COLLECTORS-COMPILED BY-ENTERED BY-DONOR-----------
351	Alverson Canyon Imperial Co. CA U.S.A. 0° 0' 0" -- 0° 0' 0" Carrizo Mountain, CA 1:24000 USGS 1957	Imperial Group Latrania Formation Cenozoic Neogene late Miocene sdst-	Frank Stephens 11 May 1930 Frank Stephens 0 0 H.P. Don Vito 8 Sep 1994 0 0
2698	Alverson Canyon (Shell Canyon) Imperial Co. CA U.S.A. 0° 0' 0" -- 0° 0' 0" Carrizo Mountain, CA 1:24000 USGS 1957	Imperial Group Latrania Formation Cenozoic Neogene late Miocene sdst-	J.W. Tobiska 0 0 Jan W. Tobiska 6 Jun 1975 H.P. Don Vito 31 Mar 1995 0 0
4981	Painted Gorge - Anomia bed Imperial Co. CA USA 32°47'19"N--115°55'40"W Painted Gorge, CA 1:24000 USGS 1957	Imperial Group Deguynos Formation Cenozoic Neogene early Pliocene - T.A. Demere NB#10:63-64, RAC #36, pg 16	R.A. Cerutti, T.A. Demere 4 Dec 2002 T.A. Demere 6 Aug 2004 T.A. Demere 6 Aug 2004 0 0
4852	Jacumba Valley - Jacumba Peak Jacumba San Diego Co. CA U.S.A. 32°37'36"N--116°11'49"W Jacumba, CA 1:24000 USGS 1959(1975)	Table Mountain Formation Cenozoic Neogene Miocene sdst-fluvial	R.A. Cerutti, P.J. Sena, C.A. Herrington 29 Oct 2000 K.A. Randall 12 Nov 2002 K.A. Randall 12 Nov 2002 0 0
4802	Jacumba Valley - South of Graciela's Canyon Jacumba San Diego Co. CA U.S.A. 32°38' 5"N--116°11' 6"W Jacumba, CA 1;24000 USGS 1959(1975)	Table Mountain Formation Cenozoic Neogene Miocene sdst-fluvial	R.A. Cerutti, K.A. Randall, S.L. Walsh, H. Wagner 15 Jan 2000 K.A. Randall 24 Oct 2002 K.A. Randall 24 Oct 2002 0 0
4805	Jacumba Valley - Graciela's Canyon Jacumba San Diego Co. CA U.S.A. 32°38' 6"N--116°11' 9"W Jacumba, CA 1:24000 USGS 1959(1975)	Table Mountain Formation Cenozoic Neogene Miocene mdst-fluvial	R.A. Cerutti, B.O. Riney, S.L. Walsh 5 Feb 1991 K.A. Randall 12 Sep 2002 K.A. Randall 24 Oct 2002 0 0
4806	Jacumba Valley - Cheater Canyon Jacumba San Diego Co. CA U.S.A. 32°38' 8"N--116°11'10"W Jacumba, CA 1:24000 USGS 1959(1975)	Table Mountain Formation Cenozoic Neogene Miocene sdst-fluvial	R.A. Cerutti, B.O. Riney, S.L. Walsh 5 Feb 1991 K.A. Randall 29 Oct 2002 K.A. Randall 29 Oct 2002 0 0
4801	Jacumba Valley - West of Round Mountain Jacumba San Diego Co. CA U.S.A. 32°38'20"N--116°11'18"W Jacumba, CA 1:24000 USGS 1959(1975)	Table Mountain Formation Cenozoic Neogene Miocene sdst-fluvial	R.A. Cerutti, K.A. Randall, S.L. Walsh, H. Wagner 15 Jan 2000 K.A. Randall 24 Oct 2002 K.A. Randall 24 Oct 2002 0 0
5615	McMillin Sycamore Estates Phase 1, site 1 San Diego San Diego Co. CA USA 32°55'30"N--117° 1'33"W Poway, CA 1:24000 USGS 1967(1975)	La Jolla Group Friars Formation conglomerate tongue Cenozoic Paleogene middle Eocene early Uintan sltst-fluvial MHS book #3 pgs.23, 27-29, BOR book #29 pg 48, MKB	MHS, MKB, IDB, HMW, SLW, BOR, KAR 6 May 2004 M.H. Stevens 14 Feb 2005 M.K. Soetaert 11 May 2005 McMillin Land Development 6 May 2004
5616	McMillin Sycamore Estates Phase 1, site 2 San Diego San Diego Co. CA USA 32°55'32"N--117° 1'12"W Poway, CA 1:24000 USGS 1967(1975)	La Jolla Group Friars Formation conglomerate tongue Cenozoic Paleogene middle Eocene early Uintan sltst-fluvial MHS book #3, MKB, BOR	M.H. Stevens 9 Jun 2004 M.H. Stevens 14 Feb 2005 M.K. Soetaert 11 May 2005 McMillin Land Development 9 Jun 2004

<u>Appendix C</u>

LACMIP Paleontological Localities

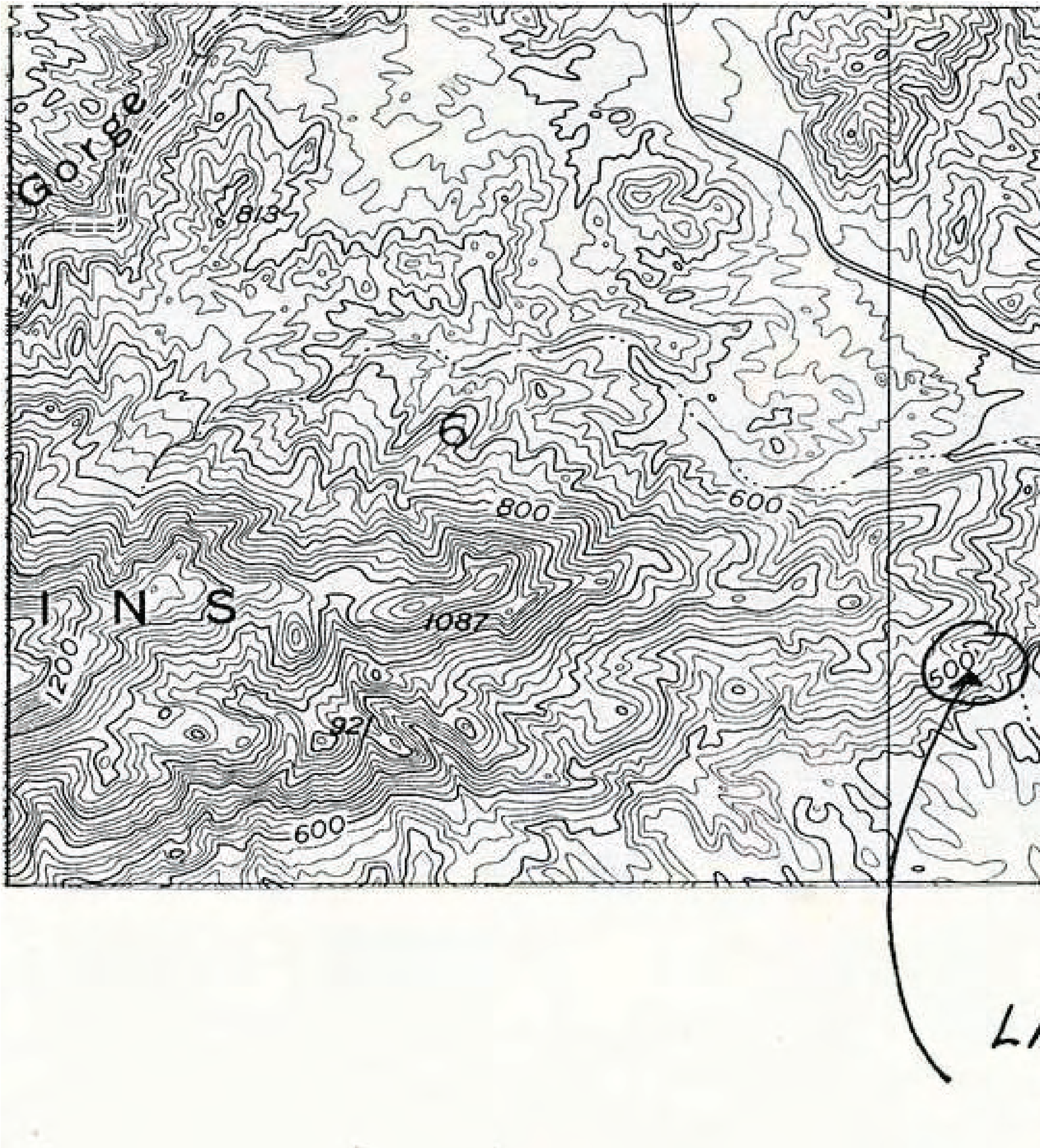
NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY
DEPARTMENT OF INVERTEBRATE PALEONTOLOGY

LACMIP Locality 17401
Acc. No.

Age: Aquitanian - Piacenzian
Locality: Imperial County, California, USA
Unit: Imperial Formation, Latrania Member
Collector: J.T. Smith; 88JS9
Alt. Loc. No.:
Map: USGS, 1979, Painted Gorge, CA 1:24000.
Lat./Long.:
Township/Range: Section 5, T16S, R10E

Locality is referred to as "stacks of Lyropectens." Southeast flank of Coyote Mountains. Latrania Member of Imperial Formation. Cross-listed as 88JS9. See map. (LACMIP Locality Card)

(Jennifer M. Wiggins, 2004-2-3)


Gorge
813
6
800
600
I N S
1087
1200
921
600
500
LA

<u>Appendix D</u>

Inventory of Geologic Rock Units Along ROW

Segment	Mile From	Mile To	Paleontological Resource	Paleontological Sensitivity
1	0.0	0.0	Qoa - Pleistocene older alluvium	Unknown
2	0.0	0.1	Qoa - Pleistocene older alluvium	Unknown
2	0.1	0.2	Qoa - Pleistocene older alluvium	Unknown
2	0.2	0.3	Qoa - Pleistocene older alluvium	Unknown
2	0.3	0.4	Qoa - Pleistocene older alluvium	Unknown
2	0.4	0.5	Qoa - Pleistocene older alluvium	Unknown
2	0.5	0.6	Qoa - Pleistocene older alluvium	Unknown
2	0.6	0.7	Qoa - Pleistocene older alluvium	Unknown
2	0.7	0.8	Qoa - Pleistocene older alluvium	Unknown
2	0.8	0.9	Qoa - Pleistocene older alluvium	Unknown
2	0.9	1.0	Qoa - Pleistocene older alluvium	Unknown
2	1.0	1.1	Qoa - Pleistocene older alluvium	Unknown
2	1.1	1.2	Qoa - Pleistocene older alluvium	Unknown
2	1.2	1.3	Qoa - Pleistocene older alluvium	Unknown
2	1.3	1.4	Qoa - Pleistocene older alluvium	Unknown
2	1.4	1.5	Qoa - Pleistocene older alluvium	Unknown
2	1.5	1.6	Qya - Holocene young alluvium	Low
2	1.6	1.7	Qya - Holocene young alluvium	Low
2	1.7	1.8	Qya - Holocene young alluvium	Low
2	1.8	1.9	Qya - Holocene young alluvium	Low
2	1.9	2.0	Qya - Holocene young alluvium	Low
2	2.0	2.1	Qya - Holocene young alluvium	Low
2	2.1	2.2	Qya - Holocene young alluvium	Low
2	2.2	2.3	Qya - Holocene young alluvium	Low
2	2.3	2.4	Qya - Holocene young alluvium	Low
2	2.4	2.5	Qya - Holocene young alluvium	Low
2	2.5	2.6	Qya - Holocene young alluvium	Low
2	2.6	2.7	Qya - Holocene young alluvium	Low
2	2.7	2.8	Qoa - Pleistocene older alluvium	Unknown
2	2.8	2.9	Qoa - Pleistocene older alluvium	Unknown
2	2.9	3.0	Qoa - Pleistocene older alluvium	Unknown
2	3.0	3.1	Qoa - Pleistocene older alluvium	Unknown
2	3.1	3.2	Qoa - Pleistocene older alluvium	Unknown
2	3.2	3.3	Qoa - Pleistocene older alluvium	Unknown
2	3.3	3.4	Qoa - Pleistocene older alluvium	Unknown
2	3.4	3.5	Qoa - Pleistocene older alluvium	Unknown
2	3.5	3.6	Qoa - Pleistocene older alluvium	Unknown
2	3.6	3.7	Qoa - Pleistocene older alluvium	Unknown
2	3.7	3.8	Qoa - Pleistocene older alluvium	Unknown
2	3.8	3.9	Qoa - Pleistocene older alluvium	Unknown
2	3.9	4.0	Qoa - Pleistocene older alluvium	Unknown
2	4.0	4.1	Qoa - Pleistocene older alluvium	Unknown
2	4.1	4.2	Qoa - Pleistocene older alluvium	Unknown
2	4.2	4.3	Qoa - Pleistocene older alluvium	Unknown
2	4.3	4.4	Qya - Holocene young alluvium	Low
2	4.4	4.5	Qya - Holocene young alluvium	Low
2	4.5	4.6	Qya - Holocene young alluvium	Low
2	4.6	4.7	Qya - Holocene young alluvium	Low
2	4.7	4.8	Qya - Holocene young alluvium	Low
2	4.8	4.9	Qya - Holocene young alluvium	Low
2	4.9	5.0	Qya - Holocene young alluvium	Low
2	5.0	5.1	Qya - Holocene young alluvium	Low
2	5.1	5.2	Qya - Holocene young alluvium	Low
2	5.2	5.3	Qya - Holocene young alluvium	Low
2	5.3	5.4	Qya - Holocene young alluvium	Low
2	5.4	5.5	Qya - Holocene young alluvium	Low
2	5.5	5.6	Tps - Palm Spring Group	High
2	5.6	5.7	Tps - Palm Spring Group	High
2	5.7	5.8	Tps - Palm Spring Group	High
2	5.8	5.9	Tps - Palm Spring Group	High
2	5.9	6.0	Tps - Palm Spring Group	High
2	6.0	6.1	Qya - Holocene young alluvium	Low
2	6.1	6.2	Qya - Holocene young alluvium	Low

2	6.2	6.3	Qya - Holocene young alluvium	Low
2	6.3	6.4	Qya - Holocene young alluvium	Low
2	6.4	6.5	Qya - Holocene young alluvium	Low
2	6.5	6.6	Qya - Holocene young alluvium	Low
2	6.6	6.7	Tps - Palm Spring Group	High
2	6.7	6.8	Tps - Palm Spring Group	High
2	6.8	6.9	Tps - Palm Spring Group	High
2	6.9	7.0	Qya - Holocene young alluvium	Low
2	7.0	7.1	Qya - Holocene young alluvium	Low
2	7.1	7.2	Qya - Holocene young alluvium	Low
2	7.2	7.3	Qya - Holocene young alluvium	Low
2	7.3	7.4	Qya - Holocene young alluvium	Low
2	7.4	7.5	Qya - Holocene young alluvium	Low
2	7.5	7.6	Qya - Holocene young alluvium	Low
2	7.6	7.7	Tps - Palm Spring Group	High
2	7.7	7.8	Qya - Holocene young alluvium	Low
2	7.8	7.9	Qya - Holocene young alluvium	Low
2	7.9	8.0	Tps - Palm Spring Group	High
2	8.0	8.1	Qya - Holocene young alluvium	Low
2	8.1	8.2	Qya - Holocene young alluvium	Low
2	8.2	8.3	Qya - Holocene young alluvium	Low
2	8.3	8.4	Qya - Holocene young alluvium	Low
2	8.4	8.5	Qya - Holocene young alluvium	Low
2	8.5	8.6	Qya - Holocene young alluvium	Low
2	8.6	8.7	Qya - Holocene young alluvium	Low
2	8.7	8.8	Qya - Holocene young alluvium	Low
2	8.8	8.9	Qya - Holocene young alluvium	Low
2	8.9	9.0	Qya - Holocene young alluvium	Low
2	9.0	9.1	Qya - Holocene young alluvium	Low
2	9.1	9.2	Qya - Holocene young alluvium	Low
2	9.2	9.3	Qya - Holocene young alluvium	Low
2	9.3	9.4	Qya - Holocene young alluvium	Low
2	9.4	9.5	Qya - Holocene young alluvium	Low
2	9.5	9.6	Qya - Holocene young alluvium	Low
2	9.6	9.7	Qya - Holocene young alluvium	Low
2	9.7	9.8	Qya - Holocene young alluvium	Low
2	9.8	9.9	Qya - Holocene young alluvium	Low
2	9.9	10.0	Qya - Holocene young alluvium	Low
2	10.0	10.1	Qya - Holocene young alluvium	Low
2	10.1	10.2	Qya - Holocene young alluvium	Low
2	10.2	10.3	Qya - Holocene young alluvium	Low
2	10.3	10.4	Qya - Holocene young alluvium	Low
2	10.4	10.5	Qya - Holocene young alluvium	Low
2	10.5	10.6	Qya - Holocene young alluvium	Low
2	10.6	10.7	Qoa - Pleistocene older alluvium	Unknown
2	10.7	10.8	Qoa - Pleistocene older alluvium	Unknown
2	10.8	10.9	Qoa - Pleistocene older alluvium	Unknown
2	10.9	11.0	Qoa - Pleistocene older alluvium	Unknown
2	11.0	11.1	Qoa - Pleistocene older alluvium	Unknown
2	11.1	11.2	Qoa - Pleistocene older alluvium	Unknown
2	11.2	11.3	Qoa - Pleistocene older alluvium	Unknown
2	11.3	11.4	Qoa - Pleistocene older alluvium	Unknown
2	11.4	11.5	Qoa - Pleistocene older alluvium	Unknown
2	11.5	11.6	Qoa - Pleistocene older alluvium	Unknown
2	11.6	11.7	Qoa - Pleistocene older alluvium	Unknown
2	11.7	11.8	Qoa - Pleistocene older alluvium	Unknown
2	11.8	11.9	Qoa - Pleistocene older alluvium	Unknown
2	11.9	12.0	Qoa - Pleistocene older alluvium	Unknown
2	12.0	12.1	Qoa - Pleistocene older alluvium	Unknown
2	12.1	12.2	Ti - Imperial Group	High
2	12.2	12.3	Ti - Imperial Group	High
2	12.3	12.4	Ti - Imperial Group	High
2	12.4	12.5	Ti - Imperial Group	High
2	12.5	12.6	Qya - Holocene young alluvium	Low

2	12.6	12.7	Qya - Holocene young alluvium	Low
2	12.7	12.8	Qya - Holocene young alluvium	Low
2	12.8	12.9	Qya - Holocene young alluvium	Low
2	12.9	13.0	Qya - Holocene young alluvium	Low
2	13.0	13.1	Ti - Imperial Group	High
2	13.1	13.2	Ti - Imperial Group	High
2	13.2	13.3	Ti - Imperial Group	High
2	13.3	13.4	Ti - Imperial Group	High
2	13.4	13.5	Ti - Imperial Group	High
2	13.5	13.6	Ti - Imperial Group	High
2	13.6	13.7	Ti - Imperial Group	High
2	13.7	13.8	Ti - Imperial Group	High
2	13.8	13.9	Ti - Imperial Group	High
2	13.9	14.0	Ti - Imperial Group	High
2	14.0	14.1	Ti - Imperial Group	High
2	14.1	14.2	Ti - Imperial Group	High
2	14.2	14.3	Ti - Imperial Group	High
2	14.3	14.4	Ti - Imperial Group	High
2	14.4	14.5	Ti - Imperial Group	High
2	14.5	14.6	Ti - Imperial Group	High
2	14.6	14.7	Ti - Imperial Group	High
2	14.7	14.8	Ti - Imperial Group	High
2	14.8	14.9	Ti - Imperial Group	High
2	14.9	15.0	Ti - Imperial Group	High
2	15.0	15.1	Ti - Imperial Group	High
2	15.1	15.2	Ti - Imperial Group	High
2	15.2	15.3	Ti - Imperial Group	High
2	15.3	15.4	Qya - Holocene young alluvium	Low
2	15.4	15.5	Qya - Holocene young alluvium	Low
2	15.5	15.6	Qya - Holocene young alluvium	Low
2	15.6	15.7	Ti - Imperial Group	High
2	15.7	15.8	Ti - Imperial Group	High
2	15.8	15.9	Ti - Imperial Group	High
2	15.9	16.0	Ti - Imperial Group	High
2	16.0	16.1	Ti - Imperial Group	High
2	16.1	16.2	Qoa - Pleistocene older alluvium	Low
2	16.2	16.3	Qoa - Pleistocene older alluvium	Low
2	16.3	16.4	Qoa - Pleistocene older alluvium	Low
2	16.4	16.5	Qoa - Pleistocene older alluvium	Low
2	16.5	16.6	Ti - Imperial Group	High
2	16.6	16.7	Ti - Imperial Group	High
2	16.7	16.8	Ti - Imperial Group	High
2	16.8	16.9	Ti - Imperial Group	High
2	16.9	17.0	Ti - Imperial Group	High
2	17.0	17.1	Ti - Imperial Group	High
2	17.1	17.2	Ti - Imperial Group	High
2	17.2	17.3	Ti - Imperial Group	High
2	17.3	17.4	Ti - Imperial Group	High
2	17.4	17.5	Ti - Imperial Group	High
2	17.5	17.6	Ti - Imperial Group	High
2	17.6	17.7	Ti - Imperial Group	High
2	17.7	17.8	Qoa - Pleistocene older alluvium	Unknown
2	17.8	17.9	Ti - Imperial Group	High
2	17.9	18.0	Ti - Imperial Group	High
2	18.0	18.1	Jsp - Santiago Peak Volcanics	No
2	18.1	18.2	Ti - Imperial Group	High
2	18.2	18.3	Qoa - Pleistocene older alluvium	Unknown
2	18.3	18.4	Qoa - Pleistocene older alluvium	Unknown
2	18.4	18.5	Qoa - Pleistocene older alluvium	Unknown
2	18.5	18.6	Qoa - Pleistocene older alluvium	Unknown
2	18.6	18.7	Qoa - Pleistocene older alluvium	Unknown
2	18.7	18.8	Qoa - Pleistocene older alluvium	Unknown
2	18.8	18.9	Qoa - Pleistocene older alluvium	Unknown
2	18.9	19.0	Qoa - Pleistocene older alluvium	Unknown

2	19.0	19.1	Qoa - Pleistocene older alluvium	Unknown
2	19.1	19.2	Qoa - Pleistocene older alluvium	Unknown
3	19.2	19.3	Qoa - Pleistocene older alluvium	Unknown
3	19.3	19.4	Qoa - Pleistocene older alluvium	Unknown
3	19.4	19.5	Qoa - Pleistocene older alluvium	Unknown
3	19.5	19.6	Qoa - Pleistocene older alluvium	Unknown
3	19.6	19.7	Qoa - Pleistocene older alluvium	Unknown
3	19.7	19.8	Qoa - Pleistocene older alluvium	Unknown
3	19.8	19.9	Qoa - Pleistocene older alluvium	Unknown
3	19.9	20.0	Qoa - Pleistocene older alluvium	Unknown
3	20.0	20.1	Qoa - Pleistocene older alluvium	Unknown
3	20.1	20.2	Qoa - Pleistocene older alluvium	Unknown
3	20.2	20.3	Qoa - Pleistocene older alluvium	Unknown
3	20.3	20.4	Qoa - Pleistocene older alluvium	Unknown
3	20.4	20.5	Qoa - Pleistocene older alluvium	Unknown
3	20.5	20.6	Qoa - Pleistocene older alluvium	Unknown
3	20.6	20.7	Qoa - Pleistocene older alluvium	Unknown
3	20.7	20.8	Qoa - Pleistocene older alluvium	Unknown
3	20.8	20.9	Qoa - Pleistocene older alluvium	Unknown
3	20.9	21.0	Qoa - Pleistocene older alluvium	Unknown
3	21.0	21.1	Qoa - Pleistocene older alluvium	Unknown
3	21.1	21.2	Qoa - Pleistocene older alluvium	Unknown
3	21.2	21.3	Qoa - Pleistocene older alluvium	Unknown
3	21.3	21.4	Qoa - Pleistocene older alluvium	Unknown
3	21.4	21.5	Qoa - Pleistocene older alluvium	Unknown
3	21.5	21.6	Qoa - Pleistocene older alluvium	Unknown
3	21.6	21.7	Qoa - Pleistocene older alluvium	Unknown
3	21.7	21.8	Qoa - Pleistocene older alluvium	Unknown
3	21.8	21.9	Qoa - Pleistocene older alluvium	Unknown
3	21.9	22.0	Qoa - Pleistocene older alluvium	Unknown
3	22.0	22.1	Qoa - Pleistocene older alluvium	Unknown
3	22.1	22.2	Qoa - Pleistocene older alluvium	Unknown
3	22.2	22.3	Qoa - Pleistocene older alluvium	Unknown
3	22.3	22.4	Qoa - Pleistocene older alluvium	Unknown
3	22.4	22.5	Qoa - Pleistocene older alluvium	Unknown
3	22.5	22.6	Qoa - Pleistocene older alluvium	Unknown
3	22.6	22.7	Qoa - Pleistocene older alluvium	Unknown
3	22.7	22.8	Qoa - Pleistocene older alluvium	Unknown
3	22.8	22.9	Tj - Jacumba Volcanics	No
3	22.9	23.0	Tj - Jacumba Volcanics	No
3	23.0	23.1	Tj - Jacumba Volcanics	No
3	23.1	23.2	Tj - Jacumba Volcanics	No
4	23.2	23.3	Tj - Jacumba Volcanics	No
4	23.3	23.4	Qoa - Pleistocene older alluvium	Unknown
4	23.4	23.5	Qoa - Pleistocene older alluvium	Unknown
4	23.5	23.6	Klp - tonalite of La Posta	No
4	23.6	23.7	Klp - tonalite of La Posta	No
4	23.7	23.8	Klp - tonalite of La Posta	No
4	23.8	23.9	Klp - tonalite of La Posta	No
4	23.9	24.0	Klp - tonalite of La Posta	No
4	24.0	24.1	Klp - tonalite of La Posta	No
4	24.1	24.2	Klp - tonalite of La Posta	No
4	24.2	24.3	Klp - tonalite of La Posta	No
4	24.3	24.4	Klp - tonalite of La Posta	No
4	24.4	24.5	Klp - tonalite of La Posta	No
4	24.5	24.6	Klp - tonalite of La Posta	No
4	24.6	24.7	Klp - tonalite of La Posta	No
4	24.7	24.8	Klp - tonalite of La Posta	No
4	24.8	24.9	Klp - tonalite of La Posta	No
4	24.9	25.0	Klp - tonalite of La Posta	No
4	25.0	25.1	Klp - tonalite of La Posta	No
4	25.1	25.2	Klp - tonalite of La Posta	No
4	25.2	25.3	Klp - tonalite of La Posta	No
4	25.3	25.4	MzPzm - Mesozoic metasediments	No

4	25.4	25.5	MzPzm - Mesozoic metasediments	No
4	25.5	25.6	MzPzm - Mesozoic metasediments	No
4	25.6	25.7	MzPzm - Mesozoic metasediments	No
4	25.7	25.8	Klp - tonalite of La Posta	No
4	25.8	25.9	Klp - tonalite of La Posta	No
4	25.9	26.0	Klp - tonalite of La Posta	No
4	26.0	26.1	Klp - tonalite of La Posta	No
4	26.1	26.2	Klp - tonalite of La Posta	No
4	26.2	26.3	Klp - tonalite of La Posta	No
4	26.3	26.4	Klp - tonalite of La Posta	No
4	26.4	26.5	Klp - tonalite of La Posta	No
4	26.5	26.6	Klp - tonalite of La Posta	No
4	26.6	26.7	Klp - tonalite of La Posta	No
4	26.7	26.8	Klp - tonalite of La Posta	No
4	26.8	26.9	Klp - tonalite of La Posta	No
4	26.9	27.0	Qoa - Pleistocene older alluvium	Unknown
4	27.0	27.1	Qoa - Pleistocene older alluvium	Unknown
4	27.1	27.2	Klp - tonalite of La Posta	No
4	27.2	27.3	Klp - tonalite of La Posta	No
4	27.3	27.4	Klp - tonalite of La Posta	No
4	27.4	27.5	Klp - tonalite of La Posta	No
4	27.5	27.6	Klp - tonalite of La Posta	No
4	27.6	27.7	Klp - tonalite of La Posta	No
4	27.7	27.8	Klp - tonalite of La Posta	No
4	27.8	27.9	Klp - tonalite of La Posta	No
4	27.9	28.0	Klp - tonalite of La Posta	No
4	28.0	28.1	Klp - tonalite of La Posta	No
4	28.1	28.2	Klp - tonalite of La Posta	No
4	28.2	28.3	Klp - tonalite of La Posta	No
4	28.3	28.4	Klp - tonalite of La Posta	No
4	28.4	28.5	Klp - tonalite of La Posta	No
4	28.5	28.6	Klp - tonalite of La Posta	No
4	28.6	28.7	Klp - tonalite of La Posta	No
4	28.7	28.8	Klp - tonalite of La Posta	No
4	28.8	28.9	Klp - tonalite of La Posta	No
4	28.9	29.0	Klp - tonalite of La Posta	No
4	29.0	29.1	Klp - tonalite of La Posta	No
4	29.1	29.2	Klp - tonalite of La Posta	No
4	29.2	29.3	Klp - tonalite of La Posta	No
4	29.3	29.4	Qya - Holocene young alluvium	Low
4	29.4	29.5	Qya - Holocene young alluvium	Low
4	29.5	29.6	Qya - Holocene young alluvium	Low
4	29.6	29.7	Qya - Holocene young alluvium	Low
4	29.7	29.8	Qya - Holocene young alluvium	Low
4	29.8	29.9	Qya - Holocene young alluvium	Low
4	29.9	30.0	Qya - Holocene young alluvium	Low
4	30.0	30.1	Qya - Holocene young alluvium	Low
4	30.1	30.2	Qya - Holocene young alluvium	Low
4	30.2	30.3	Qya - Holocene young alluvium	Low
5	30.3	30.4	Qya - Holocene young alluvium	Low
5	30.4	30.5	Qya - Holocene young alluvium	Low
5	30.5	30.6	Qya - Holocene young alluvium	Low
5	30.6	30.7	Qya - Holocene young alluvium	Low
5	30.7	30.8	Ta - Anza Formation	High
5	30.8	30.9	Tj - Jacumba Volcanics	No
5	30.9	31.0	Tj - Jacumba Volcanics	No
5	31.0	31.1	Tj - Jacumba Volcanics	No
5	31.1	31.2	Ta - Anza Formation	High
5	31.2	31.3	Klp - tonalite of La Posta	No
5	31.3	31.4	Klp - tonalite of La Posta	No
5	31.4	31.5	Klp - tonalite of La Posta	No
5	31.5	31.6	Klp - tonalite of La Posta	No
5	31.6	31.7	Klp - tonalite of La Posta	No
5	31.7	31.8	Qoa - Pleistocene older alluvium	Unknown

5	31.8	31.9	Qoa - Pleistocene older alluvium	Unknown
5	31.9	32.0	Klp - tonalite of La Posta	No
5	32.0	32.1	Klp - tonalite of La Posta	No
5	32.1	32.2	Klp - tonalite of La Posta	No
5	32.2	32.3	Qoa - Pleistocene older alluvium	Unknown
5	32.3	32.4	Klp - tonalite of La Posta	No
5	32.4	32.5	Klp - tonalite of La Posta	No
5	32.5	32.6	Klp - tonalite of La Posta	No
5	32.6	32.7	Klp - tonalite of La Posta	No
5	32.7	32.8	Klp - tonalite of La Posta	No
5	32.8	32.9	Klp - tonalite of La Posta	No
5	32.9	33.0	Klp - tonalite of La Posta	No
5	33.0	33.1	Klp - tonalite of La Posta	No
5	33.1	33.2	Klp - tonalite of La Posta	No
5	33.2	33.3	Klp - tonalite of La Posta	No
5	33.3	33.4	Qoa - Pleistocene older alluvium	Unknown
5	33.4	33.5	Qoa - Pleistocene older alluvium	Unknown
5	33.5	33.6	Qoa - Pleistocene older alluvium	Unknown
5	33.6	33.7	Qoa - Pleistocene older alluvium	Unknown
5	33.7	33.8	Qoa - Pleistocene older alluvium	Unknown
5	33.8	33.9	Qoa - Pleistocene older alluvium	Unknown
5	33.9	34.0	Klp - tonalite of La Posta	No
5	34.0	34.1	Klp - tonalite of La Posta	No
5	34.1	34.2	Klp - tonalite of La Posta	No
5	34.2	34.3	Klp - tonalite of La Posta	No
5	34.3	34.4	Klp - tonalite of La Posta	No
5	34.4	34.5	Klp - tonalite of La Posta	No
5	34.5	34.6	Klp - tonalite of La Posta	No
5	34.6	34.7	Klp - tonalite of La Posta	No
5	34.7	34.8	Ta - Anza Formation	High
5	34.8	34.9	Tj - Jacumba Volcanics	No
5	34.9	35.0	Tj - Jacumba Volcanics	No
5	35.0	35.1	Tj - Jacumba Volcanics	No
5	35.1	35.2	Tj - Jacumba Volcanics	No
5	35.2	35.3	Tj - Jacumba Volcanics	No
5	35.3	35.4	Tj - Jacumba Volcanics	No
5	35.4	35.5	Tj - Jacumba Volcanics	No
5	35.5	35.6	Ta - Anza Formation	High
5	35.6	35.7	Qoa - Pleistocene older alluvium	Unknown
5	35.7	35.8	Qoa - Pleistocene older alluvium	Unknown
5	35.8	35.9	Jsp - Santiago Peak Volcanics	No
5	35.9	36.0	Jsp - Santiago Peak Volcanics	No
5	36.0	36.1	Jsp - Santiago Peak Volcanics	No
5	36.1	36.2	Jsp - Santiago Peak Volcanics	No
5	36.2	36.3	Jsp - Santiago Peak Volcanics	No
5	36.3	36.4	Jsp - Santiago Peak Volcanics	No
5	36.4	36.5	Jsp - Santiago Peak Volcanics	No
5	36.5	36.6	Jsp - Santiago Peak Volcanics	No
5	36.6	36.7	Jsp - Santiago Peak Volcanics	No
5	36.7	36.8	Jsp - Santiago Peak Volcanics	No
5	36.8	36.9	Jsp - Santiago Peak Volcanics	No
5	36.9	37.0	Jsp - Santiago Peak Volcanics	No
5	37.0	37.1	Jsp - Santiago Peak Volcanics	No
5	37.1	37.2	Jsp - Santiago Peak Volcanics	No
5	37.2	37.3	Qya - Holocene young alluvium	Low
5	37.3	37.4	Qya - Holocene young alluvium	Low
5	37.4	37.5	Qya - Holocene young alluvium	Low
5	37.5	37.6	Jsp - Santiago Peak Volcanics	No
5	37.6	37.7	Jsp - Santiago Peak Volcanics	No
5	37.7	37.8	Jsp - Santiago Peak Volcanics	No
5	37.8	37.9	Jsp - Santiago Peak Volcanics	No
5	37.9	38.0	Jsp - Santiago Peak Volcanics	No
5	38.0	38.1	Jsp - Santiago Peak Volcanics	No
5	38.1	38.2	Jsp - Santiago Peak Volcanics	No

5	38.2	38.3	Klh - Indian Hill granodiorite	No
5	38.3	38.4	Klh - Indian Hill granodiorite	No
5	38.4	38.5	Klh - Indian Hill granodiorite	No
5	38.5	38.6	Klh - Indian Hill granodiorite	No
5	38.6	38.7	Klh - Indian Hill granodiorite	No
5	38.7	38.8	Klp - tonalite of La Posta	No
5	38.8	38.9	Klp - tonalite of La Posta	No
5	38.9	39.0	Klp - tonalite of La Posta	No
5	39.0	39.1	Klp - tonalite of La Posta	No
5	39.1	39.2	Klp - tonalite of La Posta	No
5	39.2	39.3	Klp - tonalite of La Posta	No
5	39.3	39.4	Qya - Holocene young alluvium	Low
5	39.4	39.5	Qya - Holocene young alluvium	Low
5	39.5	39.6	Klp - tonalite of La Posta	No
5	39.6	39.7	Klp - tonalite of La Posta	No
6	39.7	39.8	Klp - tonalite of La Posta	No
6	39.8	39.9	Klp - tonalite of La Posta	No
6	39.9	40.0	Klp - tonalite of La Posta	No
6	40.0	40.1	Klp - tonalite of La Posta	No
6	40.1	40.2	Klp - tonalite of La Posta	No
6	40.2	40.3	Klp - tonalite of La Posta	No
6	40.3	40.4	Klp - tonalite of La Posta	No
6	40.4	40.5	Klp - tonalite of La Posta	No
6	40.5	40.6	Klp - tonalite of La Posta	No
6	40.6	40.7	Klp - tonalite of La Posta	No
6	40.7	40.8	Klp - tonalite of La Posta	No
6	40.8	40.9	Klp - tonalite of La Posta	No
6	40.9	41.0	Klp - tonalite of La Posta	No
6	41.0	41.1	Klp - tonalite of La Posta	No
6	41.1	41.2	Klp - tonalite of La Posta	No
6	41.2	41.3	Klp - tonalite of La Posta	No
6	41.3	41.4	Klp - tonalite of La Posta	No
6	41.4	41.5	Klp - tonalite of La Posta	No
6	41.5	41.6	Klp - tonalite of La Posta	No
6	41.6	41.7	Klp - tonalite of La Posta	No
6	41.7	41.8	Klp - tonalite of La Posta	No
6	41.8	41.9	Klp - tonalite of La Posta	No
6	41.9	42.0	Klp - tonalite of La Posta	No
6	42.0	42.1	Klp - tonalite of La Posta	No
6	42.1	42.2	Klp - tonalite of La Posta	No
6	42.2	42.3	Klp - tonalite of La Posta	No
6	42.3	42.4	Klp - tonalite of La Posta	No
6	42.4	42.5	Klp - tonalite of La Posta	No
6	42.5	42.6	Klp - tonalite of La Posta	No
6	42.6	42.7	Klp - tonalite of La Posta	No
6	42.7	42.8	Klp - tonalite of La Posta	No
6	42.8	42.9	Klp - tonalite of La Posta	No
6	42.9	43.0	Klp - tonalite of La Posta	No
6	43.0	43.1	Klp - tonalite of La Posta	No
6	43.1	43.2	Klp - tonalite of La Posta	No
6	43.2	43.3	Klp - tonalite of La Posta	No
6	43.3	43.4	Klp - tonalite of La Posta	No
6	43.4	43.5	Klp - tonalite of La Posta	No
6	43.5	43.6	Klp - tonalite of La Posta	No
6	43.6	43.7	Klp - tonalite of La Posta	No
6	43.7	43.8	Klp - tonalite of La Posta	No
6	43.8	43.9	Klp - tonalite of La Posta	No
6	43.9	44.0	Klp - tonalite of La Posta	No
6	44.0	44.1	Klp - tonalite of La Posta	No
6	44.1	44.2	Klp - tonalite of La Posta	No
6	44.2	44.3	Klp - tonalite of La Posta	No
6	44.3	44.4	Klp - tonalite of La Posta	No
6	44.4	44.5	Klp - tonalite of La Posta	No
6	44.5	44.6	Klp - tonalite of La Posta	No

6	44.6	44.7	Klp - tonalite of La Posta	No
6	44.7	44.8	Klp - tonalite of La Posta	No
6	44.8	44.9	Klp - tonalite of La Posta	No
6	44.9	45.0	Klp - tonalite of La Posta	No
6	45.0	45.1	Klp - tonalite of La Posta	No
6	45.1	45.2	Klp - tonalite of La Posta	No
6	45.2	45.3	Klp - tonalite of La Posta	No
6	45.3	45.4	Klp - tonalite of La Posta	No
6	45.4	45.5	Klp - tonalite of La Posta	No
6	45.5	45.6	Klp - tonalite of La Posta	No
6	45.6	45.7	Klp - tonalite of La Posta	No
6	45.7	45.8	Klp - tonalite of La Posta	No
6	45.8	45.9	Klp - tonalite of La Posta	No
6	45.9	46.0	Klp - tonalite of La Posta	No
6	46.0	46.1	Klp - tonalite of La Posta	No
6	46.1	46.2	Klp - tonalite of La Posta	No
6	46.2	46.3	Klp - tonalite of La Posta	No
6	46.3	46.4	Klp - tonalite of La Posta	No
6	46.4	46.5	Klp - tonalite of La Posta	No
6	46.5	46.6	Klp - tonalite of La Posta	No
6	46.6	46.7	Klp - tonalite of La Posta	No
6	46.7	46.8	Klp - tonalite of La Posta	No
6	46.8	46.9	Klp - tonalite of La Posta	No
6	46.9	47.0	Klp - tonalite of La Posta	No
6	47.0	47.1	Klp - tonalite of La Posta	No
6	47.1	47.2	Klp - tonalite of La Posta	No
6	47.2	47.3	Klp - tonalite of La Posta	No
6	47.3	47.4	Klp - tonalite of La Posta	No
6	47.4	47.5	Klp - tonalite of La Posta	No
6	47.5	47.6	Klp - tonalite of La Posta	No
6	47.6	47.7	Klp - tonalite of La Posta	No
6	47.7	47.8	Klp - tonalite of La Posta	No
6	47.8	47.9	Klp - tonalite of La Posta	No
6	47.9	48.0	Klp - tonalite of La Posta	No
6	48.0	48.1	Klp - tonalite of La Posta	No
6	48.1	48.2	Klp - tonalite of La Posta	No
6	48.2	48.3	Klp - tonalite of La Posta	No
6	48.3	48.4	Klp - tonalite of La Posta	No
6	48.4	48.5	Klp - tonalite of La Posta	No
6	48.5	48.6	Klp - tonalite of La Posta	No
6	48.6	48.7	Klp - tonalite of La Posta	No
6	48.7	48.8	Klp - tonalite of La Posta	No
6	48.8	48.9	Klp - tonalite of La Posta	No
6	48.9	49.0	Klp - tonalite of La Posta	No
6	49.0	49.1	Klp - tonalite of La Posta	No
6	49.1	49.2	Klp - tonalite of La Posta	No
6	49.2	49.3	Klp - tonalite of La Posta	No
6	49.3	49.4	Klp - tonalite of La Posta	No
6	49.4	49.5	Klp - tonalite of La Posta	No
6	49.5	49.6	Klp - tonalite of La Posta	No
6	49.6	49.7	Klp - tonalite of La Posta	No
6	49.7	49.8	Klp - tonalite of La Posta	No
6	49.8	49.9	Klp - tonalite of La Posta	No
6	49.9	50.0	Klp - tonalite of La Posta	No
6	50.0	50.1	Klp - tonalite of La Posta	No
6	50.1	50.2	Klp - tonalite of La Posta	No
6	50.2	50.3	Klp - tonalite of La Posta	No
6	50.3	50.4	Klp - tonalite of La Posta	No
6	50.4	50.5	Klp - tonalite of La Posta	No
6	50.5	50.6	Klp - tonalite of La Posta	No
6	50.6	50.7	Klp - tonalite of La Posta	No
6	50.7	50.8	Klp - tonalite of La Posta	No
6	50.8	50.9	Klp - tonalite of La Posta	No
6	50.9	51.0	Klp - tonalite of La Posta	No

6	51.0	51.1	Klp - tonalite of La Posta	No
6	51.1	51.2	Klp - tonalite of La Posta	No
6	51.2	51.3	Qoa - Pleistocene older alluvium	Unknown
6	51.3	51.4	Klp - tonalite of La Posta	No
6	51.4	51.5	Klp - tonalite of La Posta	No
6	51.5	51.6	Klp - tonalite of La Posta	No
6	51.6	51.7	Klp - tonalite of La Posta	No
6	51.7	51.8	JTRm - Julian Schist	Unknown
6	51.8	51.9	JTRm - Julian Schist	Unknown
6	51.9	52.0	Klp - tonalite of La Posta	No
6	52.0	52.1	Klp - tonalite of La Posta	No
6	52.1	52.2	JTRm - Julian Schist	Unknown
6	52.2	52.3	JTRm - Julian Schist	Unknown
6	52.3	52.4	JTRm - Julian Schist	Unknown
6	52.4	52.5	JTRm - Julian Schist	Unknown
6	52.5	52.6	JTRm - Julian Schist	Unknown
7	52.6	52.7	JTRm - Julian Schist	Unknown
7	52.7	52.8	JTRm - Julian Schist	Unknown
7	52.8	52.9	Jcr - granodiorite of Cuyamaca Reservoir	No
7	52.9	53.0	JTRm - Julian Schist	Unknown
7	53.0	53.1	JTRm - Julian Schist	Unknown
7	53.1	53.2	JTRm - Julian Schist	Unknown
7	53.2	53.3	JTRm - Julian Schist	Unknown
7	53.3	53.4	JTRm - Julian Schist	Unknown
7	53.4	53.5	Qya - Holocene young alluvium	Low
7	53.5	53.6	Klb - tonalite of Las Bancas	No
7	53.6	53.7	Klb - tonalite of Las Bancas	No
7	53.7	53.8	Jcr - granodiorite of Cuyamaca Reservoir	No
7	53.8	53.9	Qoa - Pleistocene older alluvium	Unknown
7	53.9	54.0	Qoa - Pleistocene older alluvium	Unknown
7	54.0	54.1	JTRm - Julian Schist	Unknown
7	54.1	54.2	JTRm - Julian Schist	Unknown
7	54.2	54.3	JTRm - Julian Schist	Unknown
7	54.3	54.4	JTRm - Julian Schist	Unknown
7	54.4	54.5	Kc - Cuyamaca gabbro	No
7	54.5	54.6	Kgm - tonalite of Granite Mountain	No
7	54.6	54.7	Kgm - tonalite of Granite Mountain	No
7	54.7	54.8	Kgm - tonalite of Granite Mountain	No
7	54.8	54.9	Kgm - tonalite of Granite Mountain	No
7	54.9	55.0	Kgm - tonalite of Granite Mountain	No
7	55.0	55.1	Kgm - tonalite of Granite Mountain	No
7	55.1	55.2	Kgm - tonalite of Granite Mountain	No
7	55.2	55.3	Kgm - tonalite of Granite Mountain	No
7	55.3	55.4	Kgm - tonalite of Granite Mountain	No
7	55.4	55.5	Kgm - tonalite of Granite Mountain	No
7	55.5	55.6	Kgm - tonalite of Granite Mountain	No
7	55.6	55.7	Kgm - tonalite of Granite Mountain	No
7	55.7	55.8	Kgm - tonalite of Granite Mountain	No
7	55.8	55.9	Kgm - tonalite of Granite Mountain	No
7	55.9	56.0	Kgm - tonalite of Granite Mountain	No
7	56.0	56.1	Kgm - tonalite of Granite Mountain	No
7	56.1	56.2	Kgm - tonalite of Granite Mountain	No
7	56.2	56.3	Klp - tonalite of La Posta	No
7	56.3	56.4	Klp - tonalite of La Posta	No
7	56.4	56.5	Klp - tonalite of La Posta	No
7	56.5	56.6	Qya - Holocene young alluvium	Low
7	56.6	55.7	Klp - tonalite of La Posta	No
7	55.7	55.8	Klp - tonalite of La Posta	No
7	55.8	55.9	Klp - tonalite of La Posta	No
7	55.9	56.0	Klp - tonalite of La Posta	No
7	56.0	56.1	Klp - tonalite of La Posta	No
7	56.1	56.2	Klp - tonalite of La Posta	No
7	56.2	56.3	Klp - tonalite of La Posta	No
7	56.3	56.4	Klp - tonalite of La Posta	No

7	56.4	56.5	Klp - tonalite of La Posta	No
7	56.5	56.6	Klp - tonalite of La Posta	No
7	56.6	56.7	Klp - tonalite of La Posta	No
7	56.7	56.8	Klp - tonalite of La Posta	No
7	56.8	56.9	Klp - tonalite of La Posta	No
7	56.9	57.0	Klp - tonalite of La Posta	No
7	57.0	57.1	Klp - tonalite of La Posta	No
7	57.1	57.2	Klp - tonalite of La Posta	No
7	57.2	57.3	Klp - tonalite of La Posta	No
7	57.3	57.4	Klp - tonalite of La Posta	No
7	57.4	57.5	Klp - tonalite of La Posta	No
7	57.5	57.6	Klp - tonalite of La Posta	No
7	57.6	57.7	Klp - tonalite of La Posta	No
7	57.7	57.8	Klp - tonalite of La Posta	No
7	57.8	57.9	Klp - tonalite of La Posta	No
7	57.9	58.0	Klp - tonalite of La Posta	No
7	58.0	58.1	Klp - tonalite of La Posta	No
7	58.1	58.2	Klp - tonalite of La Posta	No
7	58.2	58.3	Klp - tonalite of La Posta	No
7	58.3	58.4	Klp - tonalite of La Posta	No
7	58.4	58.5	Klp - tonalite of La Posta	No
7	58.5	58.6	Klp - tonalite of La Posta	No
7	58.6	58.7	Klp - tonalite of La Posta	No
7	58.7	58.8	Klp - tonalite of La Posta	No
7	58.8	58.9	Klp - tonalite of La Posta	No
7	58.9	59.0	Klp - tonalite of La Posta	No
7	59.0	59.1	Klp - tonalite of La Posta	No
7	59.1	59.2	Klp - tonalite of La Posta	No
7	59.2	59.3	Klp - tonalite of La Posta	No
7	59.3	59.4	Klp - tonalite of La Posta	No
7	59.4	59.5	Klp - tonalite of La Posta	No
7	59.5	59.6	Klp - tonalite of La Posta	No
7	59.6	59.7	Klp - tonalite of La Posta	No
7	59.7	59.8	Klp - tonalite of La Posta	No
7	59.8	59.9	Klp - tonalite of La Posta	No
7	59.9	60.0	Klp - tonalite of La Posta	No
7	60.0	60.1	Klp - tonalite of La Posta	No
7	60.1	60.2	Klp - tonalite of La Posta	No
7	60.2	60.3	Klp - tonalite of La Posta	No
7	60.3	60.4	Klp - tonalite of La Posta	No
7	60.4	60.5	Klp - tonalite of La Posta	No
7	60.5	60.6	Klp - tonalite of La Posta	No
7	60.6	60.7	Klp - tonalite of La Posta	No
7	60.7	60.8	Klp - tonalite of La Posta	No
7	60.8	60.9	Klp - tonalite of La Posta	No
7	60.9	61.0	Klp - tonalite of La Posta	No
7	61.0	61.1	Klp - tonalite of La Posta	No
7	61.1	61.2	Klp - tonalite of La Posta	No
7	61.2	61.3	Klp - tonalite of La Posta	No
8	61.3	61.4	Klp - tonalite of La Posta	No
8	61.4	61.5	Klp - tonalite of La Posta	No
8	61.5	61.6	Klp - tonalite of La Posta	No
8	61.6	61.7	Klp - tonalite of La Posta	No
8	61.7	61.8	Klp - tonalite of La Posta	No
8	61.8	61.9	Klp - tonalite of La Posta	No
8	61.9	62.0	Klp - tonalite of La Posta	No
8	62.0	62.1	Klp - tonalite of La Posta	No
8	62.1	62.2	Klp - tonalite of La Posta	No
8	62.2	62.3	Klp - tonalite of La Posta	No
8	62.3	62.4	Klp - tonalite of La Posta	No
8	62.4	62.5	Klp - tonalite of La Posta	No
8	62.5	62.6	Klp - tonalite of La Posta	No
8	62.6	62.7	Klp - tonalite of La Posta	No
8	62.7	62.8	Klp - tonalite of La Posta	No

8	62.8	62.9	Klp - tonalite of La Posta	No
8	62.9	63.0	Klp - tonalite of La Posta	No
8	63.0	63.1	Klp - tonalite of La Posta	No
8	63.1	63.2	Klp - tonalite of La Posta	No
8	63.2	63.3	Klp - tonalite of La Posta	No
8	63.3	63.4	Klp - tonalite of La Posta	No
8	63.4	63.5	Klp - tonalite of La Posta	No
8	63.5	63.6	Klp - tonalite of La Posta	No
8	63.6	63.7	Klp - tonalite of La Posta	No
8	63.7	63.8	Klp - tonalite of La Posta	No
8	63.8	63.9	Klp - tonalite of La Posta	No
8	63.9	64.0	Klp - tonalite of La Posta	No
8	64.0	64.1	Klp - tonalite of La Posta	No
8	64.1	64.2	Klp - tonalite of La Posta	No
8	64.2	64.3	Klp - tonalite of La Posta	No
8	64.3	64.4	Klp - tonalite of La Posta	No
8	64.4	64.5	Klp - tonalite of La Posta	No
8	64.5	64.6	Klp - tonalite of La Posta	No
8	64.6	64.7	Klp - tonalite of La Posta	No
8	64.7	64.8	Klp - tonalite of La Posta	No
8	64.8	64.9	Klp - tonalite of La Posta	No
8	64.9	65.0	Klp - tonalite of La Posta	No
8	65.0	65.1	Klp - tonalite of La Posta	No
8	65.1	65.2	Klp - tonalite of La Posta	No
8	65.2	65.3	Klp - tonalite of La Posta	No
8	65.3	65.4	Klp - tonalite of La Posta	No
9	65.4	65.5	Kgm - tonalite of Granite Mountain1	No
9	65.5	65.6	Kgm - tonalite of Granite Mountain1	No
9	65.6	65.7	Kgm - tonalite of Granite Mountain1	No
9	65.7	65.8	Kgm - tonalite of Granite Mountain1	No
9	65.8	65.9	Kgm - tonalite of Granite Mountain1	No
9	65.9	66.0	Kgm - tonalite of Granite Mountain1	No
9	66.0	66.1	Kgm - tonalite of Granite Mountain1	No
9	66.1	66.2	Kgm - tonalite of Granite Mountain1	No
9	66.2	66.3	Kgm - tonalite of Granite Mountain1	No
9	66.3	66.4	Kgm - tonalite of Granite Mountain1	No
9	66.4	66.5	Kgm - tonalite of Granite Mountain1	No
9	66.5	66.6	Kgm - tonalite of Granite Mountain1	No
9	66.6	66.7	Kgm - tonalite of Granite Mountain1	No
9	66.7	66.8	Kgm - tonalite of Granite Mountain1	No
9	66.8	66.9	Kgm - tonalite of Granite Mountain1	No
9	66.9	67.0	Kgm - tonalite of Granite Mountain1	No
9	67.0	67.1	Kgm - tonalite of Granite Mountain1	No
9	67.1	67.2	Kgm - tonalite of Granite Mountain1	No
9	67.2	67.3	Kgm - tonalite of Granite Mountain1	No
9	67.3	67.4	Kgm - tonalite of Granite Mountain1	No
9	67.4	67.5	Kgm - tonalite of Granite Mountain1	No
9	67.5	67.6	Kgm - tonalite of Granite Mountain2	No
9	67.6	67.7	Kgm - tonalite of Granite Mountain2	No
9	67.7	67.8	Kgm - tonalite of Granite Mountain2	No
9	67.8	67.9	Kgm - tonalite of Granite Mountain2	No
9	67.9	68.0	Kgm - tonalite of Granite Mountain2	No
9	68.0	68.1	Kgm - tonalite of Granite Mountain2	No
9	68.1	68.2	Kgm - tonalite of Granite Mountain2	No
9	68.2	68.3	Qya - Holocene young alluvium	Low
9	68.3	68.4	Qya - Holocene young alluvium	Low
9	68.4	68.5	Qya - Holocene young alluvium	Low
9	68.5	68.6	Kgm - tonalite of Granite Mountain2	No
9	68.6	68.7	Kgm - tonalite of Granite Mountain2	No
9	68.7	68.8	Kgm - tonalite of Granite Mountain2	No
9	68.8	68.9	Kgm - tonalite of Granite Mountain2	No
9	68.9	69.0	Kgm - tonalite of Granite Mountain2	No
9	69.0	69.1	Kgm - tonalite of Granite Mountain2	No
9	69.1	69.2	Kgm - tonalite of Granite Mountain2	No

9	69.2	69.3	Kgm - tonalite of Granite Mountain3	No
9	69.3	69.4	Kgm - tonalite of Granite Mountain3	No
9	69.4	69.5	Kgm - tonalite of Granite Mountain3	No
9	69.5	69.6	Kgm - tonalite of Granite Mountain3	No
9	69.6	69.7	Kgm - tonalite of Granite Mountain3	No
9	69.7	69.8	Klp - tonalite of La Posta	No
9	69.8	69.9	Klp - tonalite of La Posta	No
9	69.9	70.0	Klp - tonalite of La Posta	No
9	70.0	70.1	Klp - tonalite of La Posta	No
9	70.1	70.2	Klp - tonalite of La Posta	No
9	70.2	70.3	Klp - tonalite of La Posta	No
9	70.3	70.4	Klp - tonalite of La Posta	No
9	70.4	70.5	Klp - tonalite of La Posta	No
9	70.5	70.6	Klp - tonalite of La Posta	No
9	70.6	70.7	Klp - tonalite of La Posta	No
9	70.7	70.8	Klp - tonalite of La Posta	No
9	70.8	70.9	Klp - tonalite of La Posta	No
10	70.9	71.0	Klp - tonalite of La Posta	No
10	71.0	71.1	Klp - tonalite of La Posta	No
10	71.1	71.2	Klp - tonalite of La Posta	No
10	71.2	71.3	Klp - tonalite of La Posta	No
10	71.3	71.4	Klp - tonalite of La Posta	No
10	71.4	71.5	Klp - tonalite of La Posta	No
10	71.5	71.6	Klp - tonalite of La Posta	No
10	71.6	71.7	Klp - tonalite of La Posta	No
10	71.7	71.8	Klp - tonalite of La Posta	No
10	71.8	71.9	Klp - tonalite of La Posta	No
10	71.9	72.0	Klp - tonalite of La Posta	No
10	72.0	72.1	Klp - tonalite of La Posta	No
10	72.1	72.2	Klp - tonalite of La Posta	No
10	72.2	72.3	Klp - tonalite of La Posta	No
10	72.3	72.4	Klp - tonalite of La Posta	No
10	72.4	72.5	Klp - tonalite of La Posta	No
10	72.5	72.6	Klp - tonalite of La Posta	No
10	72.6	72.7	Klp - tonalite of La Posta	No
10	72.7	72.8	Klp - tonalite of La Posta	No
10	72.8	72.9	Klp - tonalite of La Posta	No
10	72.9	73.0	Kgm - tonalite of Granite Mountain3	No
10	73.0	73.1	Kgm - tonalite of Granite Mountain3	No
10	73.1	73.2	Kgm - tonalite of Granite Mountain3	No
10	73.2	73.3	Kgm - tonalite of Granite Mountain2	No
10	73.3	73.4	Kgm - tonalite of Granite Mountain2	No
10	73.4	73.5	Qya - Holocene young alluvium	Low
10	73.5	73.6	Qya - Holocene young alluvium	Low
10	73.6	73.7	Qya - Holocene young alluvium	Low
10	73.7	73.8	Qya - Holocene young alluvium	Low
10	73.8	73.9	Qya - Holocene young alluvium	Low
10	73.9	74.0	Kc - Cuyamaca gabbro	No
10	74.0	74.1	Kc - Cuyamaca gabbro	No
10	74.1	74.2	Kc - Cuyamaca gabbro	No
10	74.2	74.3	Kc - Cuyamaca gabbro	No
10	74.3	74.4	Kc - Cuyamaca gabbro	No
10	74.4	74.5	Kc - Cuyamaca gabbro	No
10	74.5	74.6	Kc - Cuyamaca gabbro	No
10	74.6	74.7	Kc - Cuyamaca gabbro	No
10	74.7	74.8	Kc - Cuyamaca gabbro	No
11	74.8	74.9	Kc - Cuyamaca gabbro	No
11	74.9	75.0	Kc - Cuyamaca gabbro	No
11	75.0	75.1	Kc - Cuyamaca gabbro	No
11	75.1	75.2	Kc - Cuyamaca gabbro	No
11	75.2	75.3	Kc - Cuyamaca gabbro	No
11	75.3	75.4	Kc - Cuyamaca gabbro	No
11	75.4	75.5	Kc - Cuyamaca gabbro	No
11	75.5	75.6	Kc - Cuyamaca gabbro	No

11	75.6	75.7	Kc - Cuyamaca gabbro	No
11	75.7	75.8	Kc - Cuyamaca gabbro	No
11	75.8	75.9	Kc - Cuyamaca gabbro	No
11	75.9	76.0	Kc - Cuyamaca gabbro	No
11	76.0	76.1	Kc - Cuyamaca gabbro	No
11	76.1	76.2	Kc - Cuyamaca gabbro	No
11	76.2	76.3	Kc - Cuyamaca gabbro	No
11	76.3	76.4	Kc - Cuyamaca gabbro	No
11	76.4	76.5	Kc - Cuyamaca gabbro	No
11	76.5	76.6	Kc - Cuyamaca gabbro	No
11	76.6	76.7	Kc - Cuyamaca gabbro	No
11	76.7	76.8	Kc - Cuyamaca gabbro	No
11	76.8	76.9	Kc - Cuyamaca gabbro	No
11	76.9	77.0	Kc - Cuyamaca gabbro	No
11	77.0	77.1	Kc - Cuyamaca gabbro	No
11	77.1	77.2	Kc - Cuyamaca gabbro	No
11	77.2	77.3	Kc - Cuyamaca gabbro	No
11	77.3	77.4	Kc - Cuyamaca gabbro	No
11	77.4	77.5	Kc - Cuyamaca gabbro	No
11	77.5	77.6	Kc - Cuyamaca gabbro	No
12	77.6	77.7	Kc - Cuyamaca gabbro	No
12	77.7	77.8	Kc - Cuyamaca gabbro	No
12	77.8	77.9	Kc - Cuyamaca gabbro	No
12	77.9	78.0	Kc - Cuyamaca gabbro	No
12	78.0	78.1	Kc - Cuyamaca gabbro	No
12	78.1	78.2	Kc - Cuyamaca gabbro	No
12	78.2	78.3	Kc - Cuyamaca gabbro	No
12	78.3	78.4	Kc - Cuyamaca gabbro	No
12	78.4	78.5	Kc - Cuyamaca gabbro	No
12	78.5	78.6	Kc - Cuyamaca gabbro	No
12	78.6	78.7	Kc - Cuyamaca gabbro	No
12	78.7	78.8	Kc - Cuyamaca gabbro	No
12	78.8	78.9	Kc - Cuyamaca gabbro	No
12	78.9	79.0	Kc - Cuyamaca gabbro	No
12	79.0	79.1	Kc - Cuyamaca gabbro	No
12	79.1	79.2	Kc - Cuyamaca gabbro	No
12	79.2	79.3	Kc - Cuyamaca gabbro	No
12	79.3	79.4	Kc - Cuyamaca gabbro	No
12	79.4	79.5	Kc - Cuyamaca gabbro	No
12	79.5	79.6	Kc - Cuyamaca gabbro	No
12	79.6	79.7	Kc - Cuyamaca gabbro	No
12	79.7	79.8	Kc - Cuyamaca gabbro	No
12	79.8	79.9	Kc - Cuyamaca gabbro	No
12	79.9	80.0	Kc - Cuyamaca gabbro	No
12	80.0	80.1	Kc - Cuyamaca gabbro	No
12	80.1	80.2	Kc - Cuyamaca gabbro	No
12	80.2	80.3	Qya - Holocene young alluvium	Low
12	80.3	80.4	Kjv - Japatul Valley tonalite	No
12	80.4	80.5	Kjv - Japatul Valley tonalite	No
12	80.5	80.6	Kjv - Japatul Valley tonalite	No
12	80.6	80.7	Kjv - Japatul Valley tonalite	No
12	80.7	80.8	Kjv - Japatul Valley tonalite	No
12	80.8	80.9	Kjv - Japatul Valley tonalite	No
12	80.9	81.0	Kjv - Japatul Valley tonalite	No
12	81.0	81.1	Kjv - Japatul Valley tonalite	No
12	81.1	81.2	Kjv - Japatul Valley tonalite	No
12	81.2	81.3	Kjv - Japatul Valley tonalite	No
12	81.3	81.4	Kc - Cuyamaca gabbro	No
12	81.4	81.5	Kc - Cuyamaca gabbro	No
12	81.5	81.6	Kc - Cuyamaca gabbro	No
12	81.6	81.7	Kjv - Japatul Valley tonalite	No
12	81.7	81.8	Kjv - Japatul Valley tonalite	No
12	81.8	81.9	Kjv - Japatul Valley tonalite	No
12	81.9	82.0	Qoa - Pleistocene older alluvium	Unknown

12	82.0	82.1	Qoa - Pleistocene older alluvium	Unknown
12	82.1	82.2	Qoa - Pleistocene older alluvium	Unknown
12	82.2	82.3	Qoa - Pleistocene older alluvium	Unknown
12	82.3	82.4	Kjv - Japatul Valley tonalite	No
12	82.4	82.5	Kjv - Japatul Valley tonalite	No
12	82.5	82.6	Kjv - Japatul Valley tonalite	No
12	82.6	82.7	Kjv - Japatul Valley tonalite	No
12	82.7	82.8	Kmv - Metavolcanic rocks	No
12	82.8	82.9	Kjv - Japatul Valley tonalite	No
12	82.9	83.0	Kjv - Japatul Valley tonalite	No
12	83.0	83.1	Kc - Cuyamaca gabbro	No
12	83.1	83.2	Kc - Cuyamaca gabbro	No
12	83.2	83.3	Kc - Cuyamaca gabbro	No
12	83.3	83.4	Kc - Cuyamaca gabbro	No
12	83.4	83.5	Kc - Cuyamaca gabbro	No
12	83.5	83.6	Kc - Cuyamaca gabbro	No
12	83.6	83.7	Kc - Cuyamaca gabbro	No
12	83.7	83.8	Kc - Cuyamaca gabbro	No
12	83.8	83.9	Kc - Cuyamaca gabbro	No
12	83.9	84.0	Kc - Cuyamaca gabbro	No
12	84.0	84.1	Kc - Cuyamaca gabbro	No
12	84.1	84.2	Kc - Cuyamaca gabbro	No
12	84.2	84.3	Kc - Cuyamaca gabbro	No
12	84.3	84.4	Kc - Cuyamaca gabbro	No
12	84.4	84.5	Kc - Cuyamaca gabbro	No
12	84.5	84.6	Kc - Cuyamaca gabbro	No
12	84.6	84.7	Kc - Cuyamaca gabbro	No
12	84.7	84.8	Kc - Cuyamaca gabbro	No
12	84.8	84.9	Kc - Cuyamaca gabbro	No
12	84.9	85.0	Kc - Cuyamaca gabbro	No
12	85.0	85.1	Kc - Cuyamaca gabbro	No
12	85.1	85.2	Kc - Cuyamaca gabbro	No
12	85.2	85.3	Kc - Cuyamaca gabbro	No
12	85.3	85.4	Kc - Cuyamaca gabbro	No
12	85.4	85.5	Kjv - Japatul Valley tonalite	No
12	85.5	85.6	Kjv - Japatul Valley tonalite	No
12	85.6	85.7	Kjv - Japatul Valley tonalite	No
12	85.7	85.8	Kjv - Japatul Valley tonalite	No
12	85.8	85.9	Kjv - Japatul Valley tonalite	No
12	85.9	86.0	Kmv - Metavolcanic rocks	No
12	86.0	86.1	Kmv - Metavolcanic rocks	No
12	86.1	86.2	Kjv - Japatul Valley tonalite	No
12	86.2	86.3	Kjv - Japatul Valley tonalite	No
12	86.3	86.4	Kjv - Japatul Valley tonalite	No
12	86.4	86.5	Kjv - Japatul Valley tonalite	No
12	86.5	86.6	Kjv - Japatul Valley tonalite	No
12	86.6	86.7	Kjv - Japatul Valley tonalite	No
12	86.7	86.8	Kjv - Japatul Valley tonalite	No
12	86.8	86.9	Kjv - Japatul Valley tonalite	No
12	86.9	87.0	Kjv - Japatul Valley tonalite	No
12	87.0	87.1	Kjv - Japatul Valley tonalite	No
12	87.1	87.2	Kjv - Japatul Valley tonalite	No
12	87.2	87.3	Kjv - Japatul Valley tonalite	No
12	87.3	87.4	Kjv - Japatul Valley tonalite	No
12	87.4	87.5	Kjv - Japatul Valley tonalite	No
12	87.5	87.6	Kjv - Japatul Valley tonalite	No
12	87.6	87.7	Kjv - Japatul Valley tonalite	No
12	87.7	87.8	Kjv - Japatul Valley tonalite	No
12	87.8	87.9	Kjv - Japatul Valley tonalite	No
12	87.9	88.0	Kjv - Japatul Valley tonalite	No
12	88.0	88.1	Kjv - Japatul Valley tonalite	No
12	88.1	88.2	Kjv - Japatul Valley tonalite	No
12	88.2	88.3	Kjv - Japatul Valley tonalite	No
12	88.3	88.4	Kjv - Japatul Valley tonalite	No

12	88.4	88.5	Kjv - Japatul Valley tonalite	No
12	88.5	88.6	Kjv - Japatul Valley tonalite	No
12	88.6	88.7	Kjv - Japatul Valley tonalite	No
12	88.7	88.8	KJvs - Metavolcanic & metasedimentary rocks	No
12	88.8	88.9	KJvs - Metavolcanic & metasedimentary rocks	No
12	88.9	89.0	KJvs - Metavolcanic & metasedimentary rocks	No
12	89.0	89.1	KJvs - Metavolcanic & metasedimentary rocks	No
12	89.1	89.2	KJvs - Metavolcanic & metasedimentary rocks	No
12	89.2	89.3	Kc - Cuyamaca gabbro	No
12	89.3	89.4	KJvs - Metavolcanic & metasedimentary rocks	No
12	89.4	89.5	Kc - Cuyamaca gabbro	No
12	89.5	89.6	JTRm - Julian Schist	Unknown
12	89.6	89.7	JTRm - Julian Schist	Unknown
12	89.7	89.8	Ka - tonalite of Alpine	No
12	89.8	89.9	Ka - tonalite of Alpine	No
12	89.9	90.0	Ka - tonalite of Alpine	No
14	90.0	90.1	Ka - tonalite of Alpine	No
14	90.1	90.2	Ka - tonalite of Alpine	No
14	90.2	90.3	Ka - tonalite of Alpine	No
14	90.3	90.4	Ka - tonalite of Alpine	No
14	90.4	90.5	Ka - tonalite of Alpine	No
14	90.5	90.6	Ka - tonalite of Alpine	No
14	90.6	90.7	Ka - tonalite of Alpine	No
14	90.7	90.8	Ka - tonalite of Alpine	No
14	90.8	90.9	Ka - tonalite of Alpine	No
14	90.9	91.0	Ka - tonalite of Alpine	No
14	91.0	91.1	Ka - tonalite of Alpine	No
14	91.1	91.2	Ka - tonalite of Alpine	No
14	91.2	91.3	Ka - tonalite of Alpine	No
14	91.3	91.4	Ka - tonalite of Alpine	No
14	91.4	91.5	Ka - tonalite of Alpine	No
14	91.5	91.6	Ka - tonalite of Alpine	No
14	91.6	91.7	Ka - tonalite of Alpine	No
14	91.7	91.8	Ka - tonalite of Alpine	No
14	91.8	91.9	Ka - tonalite of Alpine	No
14	91.9	92.0	Ka - tonalite of Alpine	No
14	92.0	92.1	Ka - tonalite of Alpine	No
14	92.1	92.2	Ka - tonalite of Alpine	No
14	92.2	92.3	Ka - tonalite of Alpine	No
14	92.3	92.4	Ka - tonalite of Alpine	No
14	92.4	92.5	Ka - tonalite of Alpine	No
14	92.5	92.6	Ka - tonalite of Alpine	No
14	92.6	92.7	Qya - Holocene young alluvium	Low
14	92.7	92.8	Qya - Holocene young alluvium	Low
15	92.8	92.9	Qya - Holocene young alluvium	Low
15	92.9	93.0	Ka - tonalite of Alpine	No
15	93.0	93.1	KJld - Leucocratic dikes	No
15	93.1	93.2	KJld - Leucocratic dikes	No
15	93.2	93.3	Ka - tonalite of Alpine	No
15	93.3	93.4	Ka - tonalite of Alpine	No
15	93.4	93.5	Ka - tonalite of Alpine	No
15	93.5	93.6	Ka - tonalite of Alpine	No
15	93.6	93.7	Ka - tonalite of Alpine	No
15	93.7	93.8	Ka - tonalite of Alpine	No
15	93.8	93.9	Ka - tonalite of Alpine	No
15	93.9	94.0	Ka - tonalite of Alpine	No
15	94.0	94.1	Ka - tonalite of Alpine	No
15	94.1	94.2	Ka - tonalite of Alpine	No
15	94.2	94.3	Ka - tonalite of Alpine	No
15	94.3	94.4	Ka - tonalite of Alpine	No
15	94.4	94.5	Ka - tonalite of Alpine	No
15	94.5	94.6	Ka - tonalite of Alpine	No
15	94.6	94.7	Ka - tonalite of Alpine	No
15	94.7	94.8	Ka - tonalite of Alpine	No

15	94.8	94.9	Ka - tonalite of Alpine	No
15	94.9	95.0	Ka - tonalite of Alpine	No
15	95.0	95.1	Ka - tonalite of Alpine	No
15	95.1	95.2	Ka - tonalite of Alpine	No
15	95.2	95.3	Ka - tonalite of Alpine	No
15	95.3	95.4	Ka - tonalite of Alpine	No
15	95.4	95.5	Ka - tonalite of Alpine	No
15	95.5	95.6	Ka - tonalite of Alpine	No
15	95.6	95.7	Ka - tonalite of Alpine	No
15	95.7	95.8	Ka - tonalite of Alpine	No
15	95.8	95.9	Ka - tonalite of Alpine	No
15	95.9	96.0	Ka - tonalite of Alpine	No
15	96.0	96.1	Ka - tonalite of Alpine	No
15	96.1	96.2	Ka - tonalite of Alpine	No
15	96.2	96.3	Ka - tonalite of Alpine	No
15	96.3	96.4	Ka - tonalite of Alpine	No
15	96.4	96.5	Klb - tonalite of Las Bancas	No
15	96.5	96.6	Klb - tonalite of Las Bancas	No
15	96.6	96.7	Klb - tonalite of Las Bancas	No
15	96.7	96.8	Klb - tonalite of Las Bancas	No
15	96.8	96.9	Klb - tonalite of Las Bancas	No
15	96.9	97.0	Klb - tonalite of Las Bancas	No
15	97.0	97.1	Klb - tonalite of Las Bancas	No
15	97.1	97.2	Klb - tonalite of Las Bancas	No
15	97.2	97.3	Klb - tonalite of Las Bancas	No
15	97.3	97.4	Klb - tonalite of Las Bancas	No
15	97.4	97.5	Klb - tonalite of Las Bancas	No
15	97.5	97.6	Klb - tonalite of Las Bancas	No
15	97.6	97.7	Klb - tonalite of Las Bancas	No
15	97.7	97.8	Klb - tonalite of Las Bancas	No
15	97.8	97.9	Klb - tonalite of Las Bancas	No
15	97.9	98.0	Ka - tonalite of Alpine	No
15	98.0	98.1	Klb - tonalite of Las Bancas	No
15	98.1	98.2	Klb - tonalite of Las Bancas	No
15	98.2	98.3	Klb - tonalite of Las Bancas	No
15	98.3	98.4	Klb - tonalite of Las Bancas	No
15	98.4	98.5	Klb - tonalite of Las Bancas	No
15	98.5	98.6	Klb - tonalite of Las Bancas	No
15	98.6	98.7	Klb - tonalite of Las Bancas	No
15	98.7	98.8	Klb - tonalite of Las Bancas	No
15	98.8	98.9	Ka - tonalite of Alpine	No
15	98.9	99.0	Ka - tonalite of Alpine	No
16	99.0	99.1	Ka - tonalite of Alpine	No
16	99.1	99.2	Ka - tonalite of Alpine	No
16	99.2	99.3	Ka - tonalite of Alpine	No
16	99.3	99.4	Ka - tonalite of Alpine	No
16	99.4	99.5	Ka - tonalite of Alpine	No
16	99.5	99.6	Ka - tonalite of Alpine	No
16	99.6	99.7	Ka - tonalite of Alpine	No
16	99.7	99.8	Ka - tonalite of Alpine	No
16	99.8	99.9	Ka - tonalite of Alpine	No
16	99.9	100.0	Ka - tonalite of Alpine	No
16	100.0	100.1	Ka - tonalite of Alpine	No
16	100.1	100.2	Ka - tonalite of Alpine	No
16	100.2	100.3	Klb - tonalite of Las Bancas	No
16	100.3	100.4	Klb - tonalite of Las Bancas	No
16	100.4	100.5	Klb - tonalite of Las Bancas	No
16	100.5	100.6	Klb - tonalite of Las Bancas	No
16	100.6	100.7	Klb - tonalite of Las Bancas	No
16	100.7	100.8	Klb - tonalite of Las Bancas	No
16	100.8	100.9	Klb - tonalite of Las Bancas	No
16	100.9	101.0	Klb - tonalite of Las Bancas	No
16	101.0	101.1	Klb - tonalite of Las Bancas	No
16	101.1	101.2	Qya - Holocene young alluvium	Low

16	101.2	101.3	Qya - Holocene young alluvium	Low
16	101.3	101.4	Qoa - Pleistocene older alluvium	Unknown
16	101.4	101.5	Qoa - Pleistocene older alluvium	Unknown
16	101.5	101.6	Qoa - Pleistocene older alluvium	Unknown
16	101.6	101.7	Qoa - Pleistocene older alluvium	Unknown
16	101.7	101.8	Qoa - Pleistocene older alluvium	Unknown
16	101.8	101.9	Qoa - Pleistocene older alluvium	Unknown
16	101.9	102.0	Qoa - Pleistocene older alluvium	Unknown
16	102.0	102.1	Kmv - Metavolcanic rocks	No
16	102.1	102.2	Kmv - Metavolcanic rocks	No
16	102.2	102.3	Kmv - Metavolcanic rocks	No
16	102.3	102.4	Qoa - Pleistocene older alluvium	No
16	102.4	102.5	Qoa - Pleistocene older alluvium	No
16	102.5	102.6	Kmv - Metavolcanic rocks	No
16	102.6	102.7	Qoa - Pleistocene older alluvium	Unknown
16	102.7	102.8	Qoa - Pleistocene older alluvium	Unknown
16	102.8	102.9	Qoa - Pleistocene older alluvium	Unknown
16	102.9	103.0	Qoa - Pleistocene older alluvium	Unknown
16	103.0	103.1	Qoa - Pleistocene older alluvium	Unknown
16	103.1	103.2	Qoa - Pleistocene older alluvium	Unknown
16	103.2	103.3	Qoa - Pleistocene older alluvium	Unknown
16	103.3	103.4	Qoa - Pleistocene older alluvium	Unknown
16	103.4	103.5	Qoa - Pleistocene older alluvium	Unknown
16	103.5	103.6	Kc - Cuyamaca gabbro	No
16	103.6	103.7	Kc - Cuyamaca gabbro	No
16	103.7	103.8	Kc - Cuyamaca gabbro	No
16	103.8	103.9	Kc - Cuyamaca gabbro	No
16	103.9	104.0	Klb - tonalite of Las Bancas	No
16	104.0	104.1	Klb - tonalite of Las Bancas	No
16	104.1	104.2	Klb - tonalite of Las Bancas	No
16	104.2	104.3	Klb - tonalite of Las Bancas	No
16	104.3	104.4	Klb - tonalite of Las Bancas	No
16	104.4	104.5	Ka - tonalite of Alpine	No
16	104.5	104.6	Ka - tonalite of Alpine	No
16	104.6	104.7	Kmv - Metavolcanic rocks	No
16	104.7	104.8	Kmv - Metavolcanic rocks	No
16	104.8	104.9	Kmv - Metavolcanic rocks	No
16	104.9	105.0	Kmv - Metavolcanic rocks	No
16	105.0	105.1	Kmv - Metavolcanic rocks	No
16	105.1	105.2	Kmv - Metavolcanic rocks	No
16	105.2	105.3	Kmv - Metavolcanic rocks	No
16	105.3	105.4	Kgr - Granitoid rocks	No
16	105.4	105.5	Kgr - Granitoid rocks	No
17	105.5	105.6	Kgr - Granitoid rocks	No
17	105.6	105.7	Kgr - Granitoid rocks	No
17	105.7	105.8	Kgr - Granitoid rocks	No
17	105.8	105.9	Kgr - Granitoid rocks	No
17	105.9	106.0	Kgr - Granitoid rocks	No
17	106.0	106.1	Kgr - Granitoid rocks	No
17	106.1	106.2	Kgr - Granitoid rocks	No
17	106.2	106.3	Kgr - Granitoid rocks	No
17	102.3	106.4	Kgr - Granitoid rocks	No
17	106.4	106.5	Kgr - Granitoid rocks	No
17	106.5	106.6	Kgr - Granitoid rocks	No
17	106.6	106.7	Kgr - Granitoid rocks	No
17	106.7	106.8	Kgr - Granitoid rocks	No
17	106.8	106.9	Kgr - Granitoid rocks	No
17	106.9	107.0	Kgr - Granitoid rocks	No
17	107.0	107.1	Kgr - Granitoid rocks	No
17	107.1	107.2	Kgr - Granitoid rocks	No
17	107.2	107.3	Kgr - Granitoid rocks	No
17	107.3	107.4	Kgr - Granitoid rocks	No
17	107.4	107.5	Kgr - Granitoid rocks	No
17	107.5	107.6	Kgr - Granitoid rocks	No

17	107.6	107.8	Kgr - Granitoid rocks	No
17	107.8	107.9	Kgr - Granitoid rocks	No
17	107.9	108.0	Kgr - Granitoid rocks	No
17	108.0	108.1	Kgr - Granitoid rocks	No
17	108.1	108.2	Kgr - Granitoid rocks	No
17	108.2	108.3	Kgr - Granitoid rocks	No
17	108.3	108.4	Kgr - Granitoid rocks	No
17	108.4	108.5	Kgr - Granitoid rocks	No
17	108.5	108.6	Ksp - Santiago Peak Volcanics	No
17	108.6	108.7	Ksp - Santiago Peak Volcanics	No
17	108.7	108.8	Ksp - Santiago Peak Volcanics	No
17	108.8	108.9	Qya - Holocene young alluvium	Low
17	108.9	109.0	Qya - Holocene young alluvium	Low
17	109.0	109.1	Kgr - Granitoid rocks	No
17	109.1	109.2	Kgr - Granitoid rocks	No
17	109.2	109.3	Kgr - Granitoid rocks	No
17	109.3	109.4	Tst - Stadium Conglomerate	High
17	109.4	109.5	Tp - Pomerado Conglomerate	High
17	109.5	109.6	Tp - Pomerado Conglomerate	High
17	109.6	109.7	Tp - Pomerado Conglomerate	High
17	109.7	109.8	Tp - Pomerado Conglomerate	High
17	109.8	109.9	Tp - Pomerado Conglomerate	High
17	109.9	110.0	Tp - Pomerado Conglomerate	High
17	110.0	110.1	Tp - Pomerado Conglomerate	High
17	110.1	110.2	Tp - Pomerado Conglomerate	High
17	110.2	110.3	Tp - Pomerado Conglomerate	High
17	110.3	110.4	Ksp - Santiago Peak Volcanics	No
17	110.4	110.5	Tst - Stadium Conglomerate	High
17	110.5	110.6	Tst - Stadium Conglomerate	High
17	110.6	110.7	Tp - Pomerado Conglomerate	High
17	110.7	110.8	Tp - Pomerado Conglomerate	High
17	110.8	110.9	Tp - Pomerado Conglomerate	High
17	110.9	111.0	Tp - Pomerado Conglomerate	High
17	111.0	111.1	Ksp - Santiago Peak Volcanics	No
17	111.1	111.2	Ksp - Santiago Peak Volcanics	No
17	111.2	111.3	Ksp - Santiago Peak Volcanics	No
17	111.3	111.4	Ksp - Santiago Peak Volcanics	No
17	111.4	111.5	Ksp - Santiago Peak Volcanics	No
17	111.5	111.6	Ksp - Santiago Peak Volcanics	No
17	111.6	111.7	Ksp - Santiago Peak Volcanics	No
17	111.7	111.8	Ksp - Santiago Peak Volcanics	No
17	111.8	111.9	Ksp - Santiago Peak Volcanics	No
17	111.9	112.0	Ksp - Santiago Peak Volcanics	No
17	112.0	112.1	Ksp - Santiago Peak Volcanics	No
17	112.1	112.2	Ksp - Santiago Peak Volcanics	No
17	112.2	112.3	Ksp - Santiago Peak Volcanics	No
17	112.3	112.4	Ksp - Santiago Peak Volcanics	No
17	112.4	112.5	Ksp - Santiago Peak Volcanics	No
17	112.5	112.6	Kgr - Granitoid rocks	No
17	112.6	112.7	Kgr - Granitoid rocks	No
18	112.7	112.8	Kgr - Granitoid rocks	No
18	112.8	112.9	Kgr - Granitoid rocks	No
18	112.9	113.0	Kgr - Granitoid rocks	No
18	113.0	113.1	Kgr - Granitoid rocks	No
18	113.1	113.2	Tp - Pomerado Conglomerate	High
18	113.2	113.3	Tp - Pomerado Conglomerate	High
18	113.3	113.4	Tp - Pomerado Conglomerate	High
18	113.4	113.5	Tp - Pomerado Conglomerate	High
18	113.5	113.6	Tp - Pomerado Conglomerate	High
18	113.6	113.7	Tp - Pomerado Conglomerate	High
18	113.7	113.8	Tp - Pomerado Conglomerate	High
18	113.8	113.9	Tst - Stadium Conglomerate	High
18	113.9	114.0	Tst - Stadium Conglomerate	High
18	114.0	114.1	Tst - Stadium Conglomerate	High

18	114.1	114.2	Tp - Pomerado Conglomerate	High
18	114.2	114.3	Tp - Pomerado Conglomerate	High
18	114.3	114.4	Tp - Pomerado Conglomerate	High
18	114.4	114.5	Tp - Pomerado Conglomerate	High
18	114.5	114.6	Tst - Stadium Conglomerate	High
18	114.6	114.7	Tst - Stadium Conglomerate	High
18	114.7	114.8	Tp - Pomerado Conglomerate	High
18	114.8	114.9	Tp - Pomerado Conglomerate	High
18	114.9	115.0	Tp - Pomerado Conglomerate	High
18	115.0	115.1	Tp - Pomerado Conglomerate	High
18	115.1	115.2	Tp - Pomerado Conglomerate	High
18	115.2	115.3	Tp - Pomerado Conglomerate	High
18	115.3	115.4	Tst - Stadium Conglomerate	High
18	115.4	115.5	Tp - Pomerado Conglomerate	High
18	115.5	115.6	Tp - Pomerado Conglomerate	High
18	115.6	115.7	Tp - Pomerado Conglomerate	High
18	115.7	115.8	Tst - Stadium Conglomerate	High
18	115.8	115.9	Tst - Stadium Conglomerate	High
18	115.9	116.0	Tst - Stadium Conglomerate	High
18	116.0	116.1	Tst - Stadium Conglomerate	High
18	116.1	116.2	Tp - Pomerado Conglomerate	High
18	116.2	116.3	Tst - Stadium Conglomerate	High
18	116.3	116.4	Tp - Pomerado Conglomerate	High
18	116.4	116.5	Tp - Pomerado Conglomerate	High
18	116.5	116.6	Tp - Pomerado Conglomerate	High
18	116.6	116.7	Tp - Pomerado Conglomerate	High
18	116.7	116.8	Tp - Pomerado Conglomerate	High
18	116.8	116.9	Tst - Stadium Conglomerate	High
18	116.9	117.0	Tst - Stadium Conglomerate	High
18	117.0	117.1	Tst - Stadium Conglomerate	High
18	117.1	117.2	Tst - Stadium Conglomerate	High
18	117.2	117.3	Tst - Stadium Conglomerate	High
18	117.3	117.4	Tst - Stadium Conglomerate	High
18	117.4	117.5	Tst - Stadium Conglomerate	High
18	117.5	117.6	Tst - Stadium Conglomerate	High
18	117.6	117.7	Tst - Stadium Conglomerate	High
18	117.7	117.8	Tst - Stadium Conglomerate	High
18	117.8	117.9	Tst - Stadium Conglomerate	High
18	117.9	118.0	Tst - Stadium Conglomerate	High