

Mineral Resource Investigation

OTAY RANCH RESORT VILLAGE

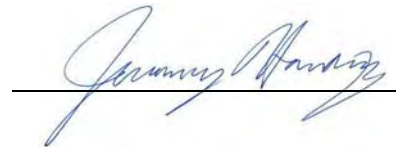
GPA04-003, SP04-002, TM5361 and TMXXXX, REZ04-009,
Environmental Log No. 04-19-0005

PREPARED FOR

**County of San Diego
Department of Planning and Land Use
5201 Ruffin Road, Suite B
San Diego, CA 92123**

PREPARED BY

**Jeramey Harding
T&B Planning Consultants
144 West "D" Street, Suite 112
Encinitas, CA 92024**

A handwritten signature in blue ink, reading "Jeramey Harding", is written over a horizontal line.

Project Proponents:

**Baldwin & Sons, LLC
Otay Ranch, LLC & JPB Development, LLC**

March 30, 2010



TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
Executive Summary	1
1.0 Introduction	2
1.1 Purpose of the Report	2
1.2 Project Location and Description	2
1.2.1 Project Location	2
1.2.2 Project Description	2
2.0 Existing Conditions	7
2.1 Topographic Setting	7
2.2 Land Uses	7
2.2.1 General Plan	7
2.2.2 Zoning	7
2.2.3 Surrounding Development	8
2.3 Mineral Resource Potential	8
2.4 Geology	9
2.4.1 Regional Geologic Setting	9
2.4.2 Soil and Geologic Conditions	9
3.0 Mineral Resource Impact Analysis	21
3.1 Guidelines for Determination of Significance	21
3.2 Impact Analysis	22
3.2.1 Land Use Compatibility	22
3.2.2 Marketability (Threshold 1)	24
3.2.3 Minimum Dollar Value (Threshold 1)	25
3.3 Significance of Impacts Prior to Mitigation	25
3.4 Mitigation Measures and Design Considerations	25
3.5 Conclusion	25
4.0 References	26
5.0 List of Preparers and Persons and Organizations Contacted	27

Appendix A: Otay Ranch Resort Village Mineral Resources Technical Review



TABLE OF CONTENTS

<u>Figure Name</u>	<u>Page</u>
Figure 1 Regional Location Map.....	4
Figure 2 Vicinity Map	5
Figure 3 Proposed Land Use Plan	6
Figure 4 USGS Map	11
Figure 5 County of San Diego General Plan Land Use Designations	12
Figure 6 County of San Diego Zoning Designations	13
Figure 7 Surrounding Land Uses.....	14
Figure 8 Mineral Resource Zones	15
Figure 9 Geologic Map (1 of 5).....	16
Figure 10 Geologic Map (2 of 5).....	17
Figure 11 Geologic Map (3 of 5).....	18
Figure 12 Geologic Map (4 of 5).....	19
Figure 13 Geologic Map (5 of 5).....	20



Executive Summary

This report has been prepared to evaluate the potential for impacts to mineral resources that could result from implementation of the Otay Ranch Resort Village project (hereafter “Project”). Specifically, this report includes a discussion of relevant mineral resources plans, regulations and guidelines; a description of the existing geologic conditions on the property; thresholds of significance for evaluating the potential significance of impacts to local mineral resources; an assessment of potential adverse effects which could result from implementation of the proposed Project; and a discussion of mitigation measures that may be necessary to reduce Project-related mineral resources impacts to a level below significant.

The Project encompasses approximately 1,869.0 acres in the Otay area of unincorporated San Diego County. Specifically, the Project site is bounded by Otay Lakes Road to the south and west and the Jamul Mountains to the north and east. The Project proposes to develop the property with single-family residential neighborhoods, a mixed-use residential and commercial neighborhood, a resort hotel with associated ancillary facilities, an elementary school site, a site for public safety facilities, parks, open space, and preserve land.

The analysis of potential impacts to mineral resources included a review of local land use plans, state mineral resource classifications, and site-specific data, including geologic mapping, subsurface exploration, air-track borings, refraction seismic surveys, and laboratory testing site-specific geologic mapping, to evaluate whether the proposed Project would result in significant on- or off-site impacts to mineral resources.

As a result of this analysis, it has been determined that the proposed Project would not result in the permanent loss of availability of a known mineral resource that would be of value to the region and its residents of the state because: 1) the Project would not develop incompatible land uses in the vicinity of an area classified as MRZ-2; 2) the Project site does not contain a MRZ classification; 3) the Project site does not contain a known mine or quarry; and 4) the alluvium, fanglomerate, and metavolcanic rock deposits that underlie the site are of low quality and would not be suitable for use as construction materials. In addition, the implementation of the Project would not result in the loss of availability of a locally-important mineral resource recovery site, as the site and the immediate surroundings are not designated as an important mineral resource site by a local general plan, specific plan, or other land use plan. Accordingly, implementation of the proposed Project would result in less than significant impacts to mineral resources and mitigation would not be required.



1.0 Introduction

1.1 Purpose of the Report

The purpose of this report is to disclose the potential for the Otay Ranch Resort Village project to contain commercially viable mineral and/or aggregate commodities. This report also identifies potential adverse effects to on- and/or off-site mineral resources that would occur with implementation of the Project. In the event significant impacts are identified, this report would recommend measures to avoid, minimize, and/or mitigate significant impacts in a manner consistent with applicable federal, state, and local rules and regulations, including the California Environmental Quality Act (CEQA). However, as discussed throughout this report, implementation of the Project would result in less than significant impacts to mineral resources and mitigation is not required. The evaluation and commentary has been developed in accordance with the guidelines provided by the County of San Diego.

1.2 Project Location and Description

1.2.1 *Project Location*

The Project site is located within the Otay area of unincorporated San Diego County (see Figure 1, *Regional Location Map*). More specifically, the Project site encompasses the southern portion of the Proctor Valley Parcel of the Otay Sub-Regional Plan, Volume 2, and is located approximately one-quarter mile east of the City of Chula Vista. The Project site is bounded by Otay Lakes Road to the south and west and the Jamul Mountains to the north and east (see Figure 2, *Vicinity Map*).

1.2.2 *Project Description*

The Project proposes to develop the property with single-family residential neighborhoods, a mixed-use residential and commercial neighborhood, a resort hotel with associated ancillary facilities, an elementary school site, a site for public safety facilities, parks, open space, and preserve land. The land use plan for the Project is depicted on Figure 3, *Proposed Land Use Plan*, and a statistical summary of proposed development is presented in Table 1, *Otay Ranch Resort Village Land Use Summary*.

The proposed Project would develop the property with six residential neighborhoods. Five traditional single-family neighborhoods would be constructed on approximately 555.5 acres of the site. A total of 1,868 detached homes would be constructed in these areas at an average density of 3.4 dwelling units per acre. The Project also proposes to construct a mixed-use neighborhood on-site. The mixed-use neighborhood would contain 70 attached homes on approximately 10.6 acres, with an average density of 6.6 dwelling units per acre. The mixed-use area also would include up to 20,000 square feet of commercial uses.

The remaining approximately 1,302.9 acres of the Project site would be reserved for non-residential uses. Approximately 17.4 acres are identified for a resort hotel complex with a maximum of 200 guest rooms and up to 20,000 square feet of ancillary uses including meeting rooms, a conference center, offices, shops, and restaurants. The Project would provide approximately 12.2 acres of public uses on-site, including a 2.2-acre public safety facility site and a 10-acre elementary school site. A total of nine parks are proposed on approximately 26.5 acres; the largest park facility on-site would have an area of approximately 10.1 acres while the remaining on-site parks would range in size from



one to 3.4 acres. The proposed Project also includes approximately 117 acres of open space and approximately 1,090 acres of preserve land. Internal circulation would comprise approximately 39.5 acres of the Project site.

Table 1 Otay Ranch Resort Village Land Use Summary

LAND USE	ACRES	UNITS	DENSITY
Residential			
Single Family ¹	555.5	1,868	3.4
Mixed Use ²	10.6	70	6.6
<i>Residential Total</i>	<i>566.1</i>	<i>1,938</i>	<i>3.4</i>
Non-Residential			
Parks	26.5	--	--
Resort ³	17.4	--	--
Public Safety	2.2	--	--
School	10.0	--	--
Open Space ⁴	117.3	--	--
Preserve	1,090.0	--	--
Circulation	39.5	--	--
<i>Non-Residential Total</i>	<i>1,302.9</i>	--	--
TOTAL	1,869.0	1,938	1.0

¹ Single Family Residential includes residential streets and internal slopes.

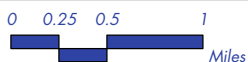
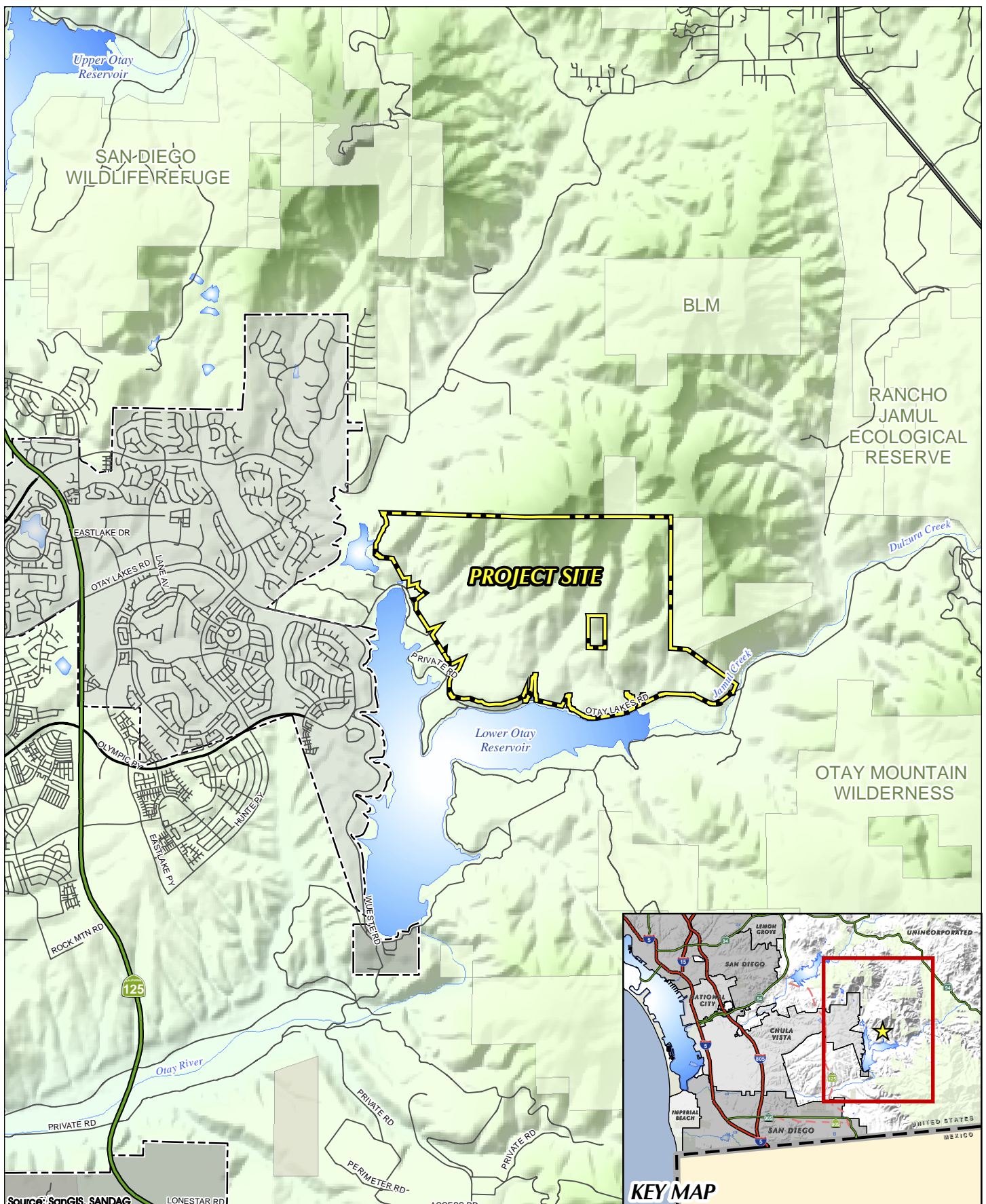
² Mixed Use includes up to 20,000 square feet of commercial use.

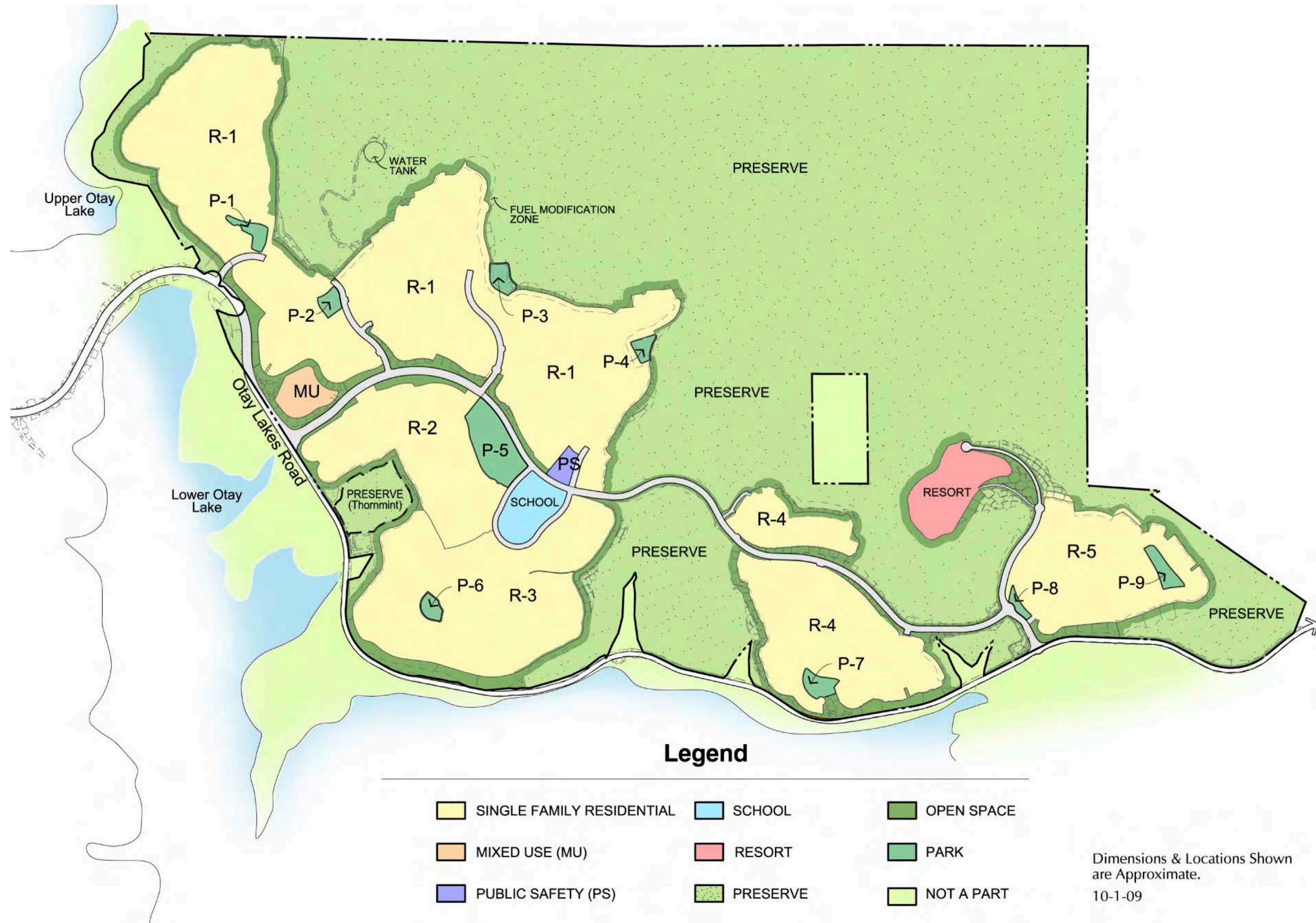
³ Resort includes up to 200 rooms and up to 20,000 sq. ft. of ancillary uses.

⁴ Open Space includes manufactured slopes outside of neighborhoods and associated residential manufactured slopes.



FIGURE 1
REGIONAL LOCATION MAP
Page 4







2.0 Existing Conditions

2.1 Topographic Setting

The approximately 1,869-acre Project site is undeveloped and consists of a broad mesa sloping to the south, broken by several steep canyons draining from north to south. Portions of the relatively flat mesa extend north into the Jamul Mountains, becoming part of steeper slopes. The topographic character of the Project site is depicted on Figure 4, *USGS Map*. Site elevations range from approximately 500 feet above mean sea level (AMSL) at the southern end of the property to approximately 1,500 feet AMSL in the northeastern portions of the property.

2.2 Land Uses

2.2.1 *General Plan*

The Project site is located wholly within the Otay Subregional Plan (Otay SRP) of the San Diego County General Plan. As depicted on Figure 5, *County of San Diego General Plan Land Use Designations*, the southern portion of the site is generally designated “(21) Specific Plan Area” and the northern portion of the site is generally designated “(24) Impact Sensitive.” Relatively small, isolated areas not a part of the Project are located in the western and central portions of the site are designated “(18) Multiple Rural Use.” Pursuant to Land Use Policy 10 of the Otay SRP, “The (24) Impact Sensitive designation has been applied to protect environmentally sensitive areas such as vernal pools, scenic bluffs, and areas potentially hazardous due to flood, steep slopes, shrink-swell and slide prone soils” (page 10). Accordingly, within the Otay SRP area the “(24) Impact Sensitive” designation was not intended to protect known or potential mineral resource deposits. Therefore, the remainder of this analysis assumes that on-site areas with the “(24) Impact Sensitive” designation were not previously identified by the County for potential mineral resource extraction uses.

Property to the north of the Project site is designated primarily “(24) Impact Sensitive;” however, areas north of the site also are designated “(22) Public/Semi-Public Lands” and “(18) Multiple Rural Use.” Areas located immediately adjacent to and south of the Project site (*i.e.*, south of Otay Lakes Road) are designated “(22) Public/Semi-Public Lands.” The Lower Otay Lake is located farther south of the site. Areas immediately to the west of the Project site are designated “(22) Public/Semi-Public Lands.” Farther west of the site is the Upper Otay Lake, Lower Otay Lake, and territory within the City of Chula Vista. Properties within the City of Chula Vista and in relative close proximity to the site are designated for a variety of residential land uses, as well as public & quasi-public and open space land uses. Areas to the east of the Project site are designated “(24) Impact Sensitive” and “(18) Multiple Rural Use.” As discussed above, the “(24) Impact Sensitive” designation is not intended to protect known or potential mineral resources deposits, and the remainder of this analysis assumes that areas with the “(24) Impact Sensitive” designation in the vicinity of the Project site were not previously identified by the County for potential mineral resource extraction uses.

2.2.2 *Zoning*

As depicted on Figure 6, *County of San Diego Zoning Designations*, the southern portion of the property is generally zoned “S88 (Specific Plan)” and the northern portion of the property is zoned “S87 (Limited Control).”



Property to the north of the Project site is zoned primarily “S80 (Open Space),” with several scattered areas to the north zoned “S87 (Limited Control).” Areas located immediately adjacent to and south of the Project site (*i.e.*, south of Otay Lakes Road) are zoned “S87 (Limited Control).” The Lower Otay Lake is located farther south of the site. Areas immediately to the west of the Project site are zoned “S87 (Limited Control).” Farther west of the site is the Upper Otay Lake, Lower Otay Lake and territory within the City of Chula Vista. Areas in the City of Chula Vista in relative close proximity to the site are zoned for a variety of residential and open space land uses. Property to the east of the Project site is zoned “A72 (General Agriculture),” “S87 (Limited Control)” and “S88 (Specific Plan).”

2.2.3 Surrounding Development

The Project site is located at the interface of urban development and scenic open space, as depicted on Figure 7, *Surrounding Land Uses*. The Otay Valley Parcel of Otay Ranch, the EastLake Vistas residential community, the EastLake Woods residential community, and the U.S. Olympic Training Center compose the edge of urban development to the west. Upper Otay Lake and the Birch Family Estate are located to the northwest. Lower Otay Lake is located immediately adjacent to and south of the Project site and the Jamul Mountains are located directly north of the Project site. A temporary ultra-light gliding and parachuting airport is located southeast of the Project site, and an inactive quarry operation (*i.e.*, Jamul Quarry) is located east of the property.

2.3 Mineral Resource Potential

The Surface Mining and Reclamation Act of 1975 (SMARA) was enacted by the California State Legislature to address the need for a continuing supply of mineral resources, and to prevent negative impacts of surface mining to public health, property, and the environment (California Public Resources Code Section 2710 *et seq.*). SMARA requires the State Geologist to classify land according to the presence, absence or likely occurrence of significant mineral deposits in certain areas of the State. To facilitate the classification of land with potential mineral deposits, the State Geologist developed the Mineral Resource Zone (MRZ) nomenclature and criteria, which factor geologic characteristics of mineral deposits with their economic characteristics, such as the grade/quality minerals and the size of the deposit. Land can be classified into four basic categories. A summary of MRZ classifications are provided below. After receiving classification information from the State Geologist, SMARA charges the State Mining and Geology Board (SMGB) to officially designate lands containing mineral deposits of regional or statewide significance.

- **MRZ-1** are areas where adequate geologic information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.
- **MRZ-2** are areas underlain by mineral deposits where geologic data show that significant measured or indicated resources are present. A typical MRZ-2 area would include an operating mine, or an area where extensive sampling has indicated the presence of a significant mineral deposit.
- **MRZ-3** are areas that contain known mineral deposits that may qualify as significant mineral resources, pending further exploration and evaluation. Further exploration within these areas could result in the reclassification of specific areas into the MRZ-2 category.
- **MRZ-4** are areas where geologic information does not rule out either the presence or absence of mineral resources and further exploration and evaluation is required. Further



exploration could result in the reclassification of MRZ-4 lands into the MRZ-1 or MRZ-2 categories.

The western one-third of San Diego County was surveyed and classified into distinct MRZs as part of the Western San Diego Production-Consumption Region survey (California Division of Mines and Geology, 1982). The Western San Diego Production-Consumption Region survey was subsequently updated in 1996 to identify regionally significant aggregate deposits in the unincorporated County. The proposed Project site is located outside of the survey limits of the Western San Diego Production-Consumption Region survey. Accordingly, the Project site is located in an uncategorized zone and does not contain a MRZ classification.

The Project site is located within the vicinity of the Jamul Quarry, which has been classified as a MRZ-2 area (see Figure 8, *Mineral Resources Zones*). The approximately 148-acre quarry, which is located east of the Project site on the southern side of Jamul Creek, contains a deposit of metavolcanic rock that is suitable for portland cement concrete (PCC) -grade aggregate. The Jamul Quarry is no longer in operation.

2.4 Geology

Geocon, Inc. performed geologic mapping and subsurface exploration of the Project site and documented their findings in a report titled *Preliminary Geotechnical Investigation Otay Ranch Resort Village* (date March 19, 2010). The findings of the field investigation performed by Geocon, Inc. are summarized below.

2.4.1 *Regional Geologic Setting*

The Project site is located within a transition area between the coastal plain of San Diego County and the foothills of the Peninsular Ranges, in the western region of the Peninsular Ranges geomorphic province. The coastal plain of San Diego County is underlain by a thick sequence of relatively undisturbed sedimentary rocks that range in age from upper Cretaceous to Pleistocene period through the late Tertiary period. The western region of the Peninsular Ranges is underlain by metavolcanic rock, previously known as the Santiago Peak Volcanics, from the late Jurassic and early Cretaceous period. These metavolcanic rocks were intruded during the early to mid-Cretaceous period by a variety of granitic and gabbroic plutons of the southern California batholith.

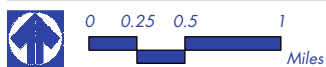
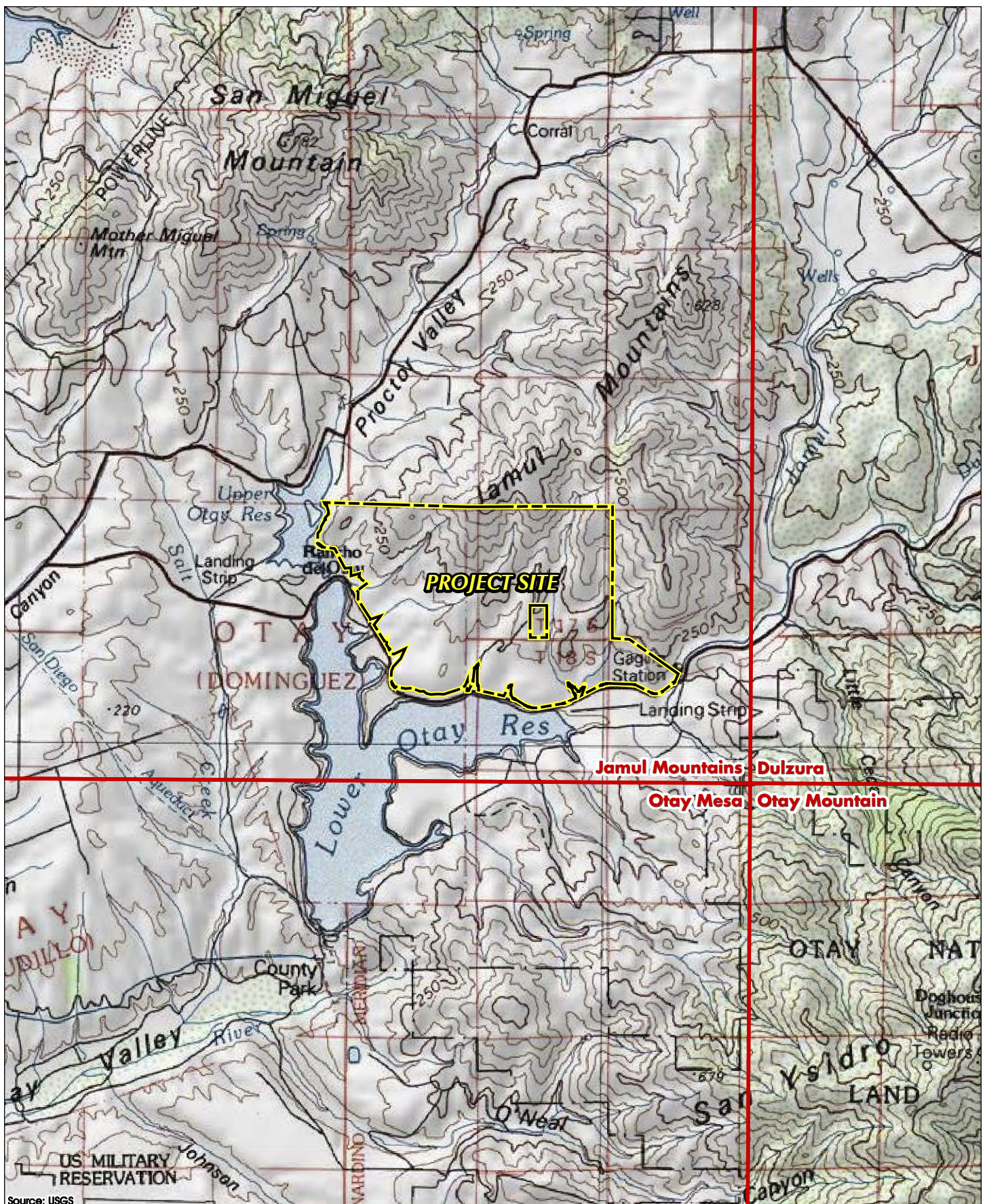
2.4.2 *Soil and Geologic Conditions*

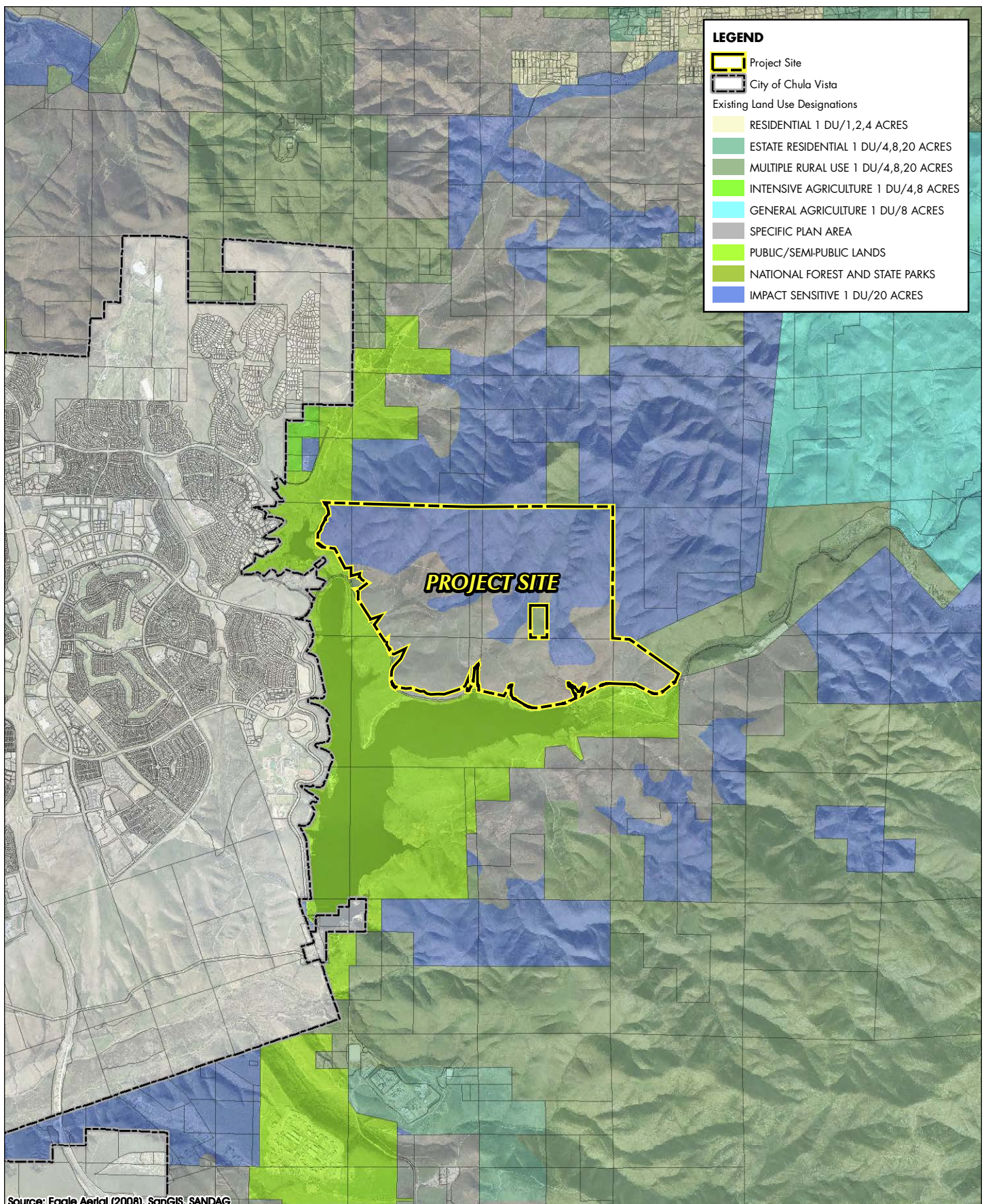
The geotechnical investigations conducted by Geocon, Inc. identified five surficial units and three geologic formations on the Project site. Each of the geologic units and formations present on-site are described below and are graphically depicted on Figure 9 through Figure 13, *Geologic Map*.

- **Undocumented Fill (Qudf).** Undocumented fill is present at several locations across the site within canyon drainages. In general, the fill consists of loose, slightly moist to moist, silt and sand with rock fragments and cobbles.
- **Topsoil (unmapped).** Holocene-age topsoil overlies the site. The topsoil has an average thickness of approximately three (3) feet and is characterized as soft to stiff and loose to medium density, dry to damp, dark brown, sandy to clayey sand with gravel and cobble. This surficial deposit does not qualify as a significant mineral deposit.

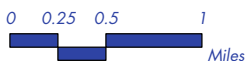
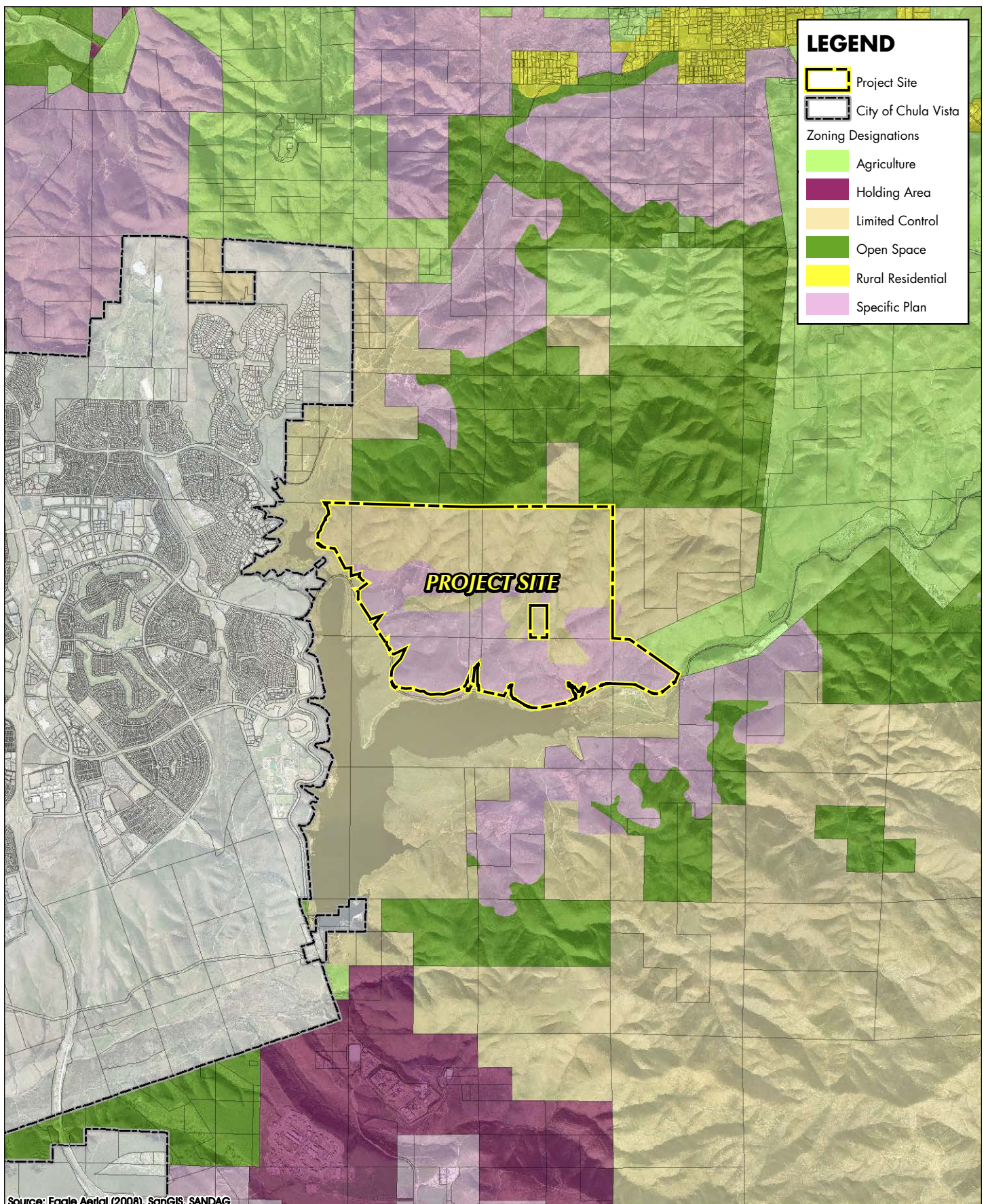


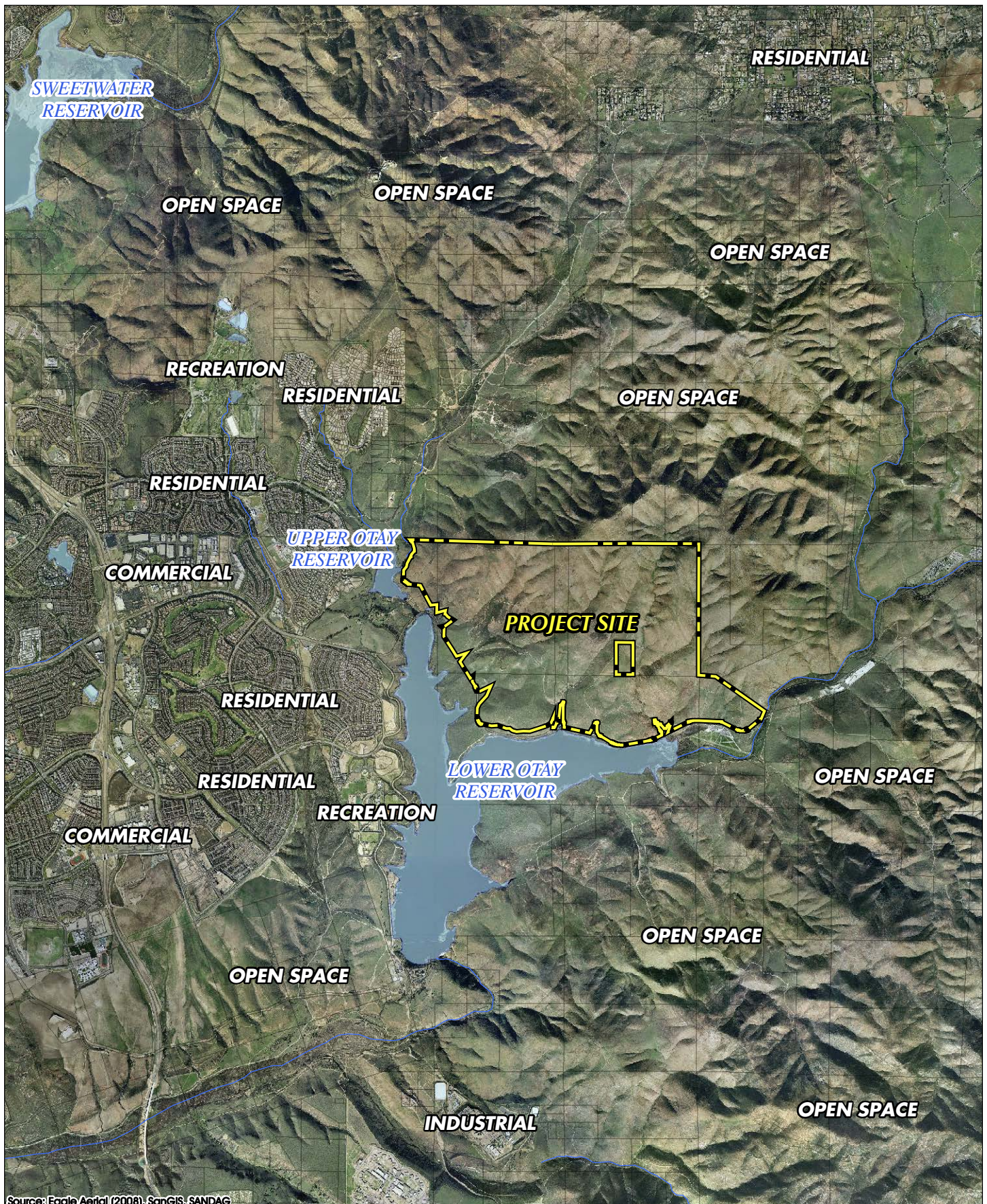
- **Alluvium (Qal).** The Project site contains limited deposits of Holocene-age alluvium within the drainage courses that traverse the site. On average, the thickness of alluvium deposits range between approximately two (2) and 10 feet; however, deposits may be thicker in larger canyon drainages. The alluvium deposits consist of dark brown, fine- to coarse-grained clayey sand and silty sand with abundant gravel, cobbles and boulders and are characterized as moderately dense, slightly-moist to moist, rooted, and porous. Preliminary laboratory testing performed by the Project geotechnical consultant indicates that on-site alluvium deposits do not meet minimum aggregate quality levels, as these deposits tend to have deleterious quantities of silts and clays.
- **Colluvium (unmapped).** Holocene-age colluvium is locally present on lower slope areas throughout the Project site. The colluvium consists of sandy clay and clayey sand with varying amounts of gravel and cobble. The thickness of colluvium generally ranges from approximately two (2) to seven (7) feet, but can be thicker along the lower portions of canyons and toes of natural slopes.
- **Fanglomerate Deposits (Tof).** Late Tertiary to Pleistocene-age Fanglomerate Deposits are located throughout the site and form gentle slopes in the south and southwestern portions of the Project site. This unit has an estimated maximum thickness between 20 and 25 feet and typically consists of dense to very dense, moderately cemented, clayey to silty sandstone and occasional sandy claystone. Preliminary excavations indicate that up to 40-percent of the on-site fanglomerate Deposits may be comprised of cobbles and boulders, with diameters up to two (2) feet. Laboratory testing performed by the Project geotechnical consultant indicates that on-site fanglomerate deposits may be suitable for use as aggregate base and crushed rock.
- **Otay Formation (To).** Tertiary-age Otay Formation is located along most of the southern portion of the site. This unit consists of dense to very dense and hard, slightly and moderately cemented, clayey sandstone and sandy claystone with interbeds of gravel, cobble, and boulders. Preliminary excavations indicate that up to 30-percent of the on-site Otay Formation deposits may be comprised of cobbles and boulders, with diameters up to 2.5 feet.
- **Metavolcanic Rock (KJmv).** Metavolcanic Rock is present on the northern, northwestern and northeastern portions of the site and is characterized as moderately strong to strong, highly to slightly weathered, and jointed. Highly weathered portions of the Metavolcanic Rock consist of highly expansive clay and soft rock. Preliminary laboratory testing performed by the Project geotechnical consultant indicates that on-site metavolcanic deposits may be suitable for use as aggregate base and crushed rock.



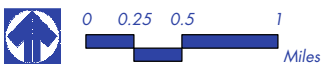


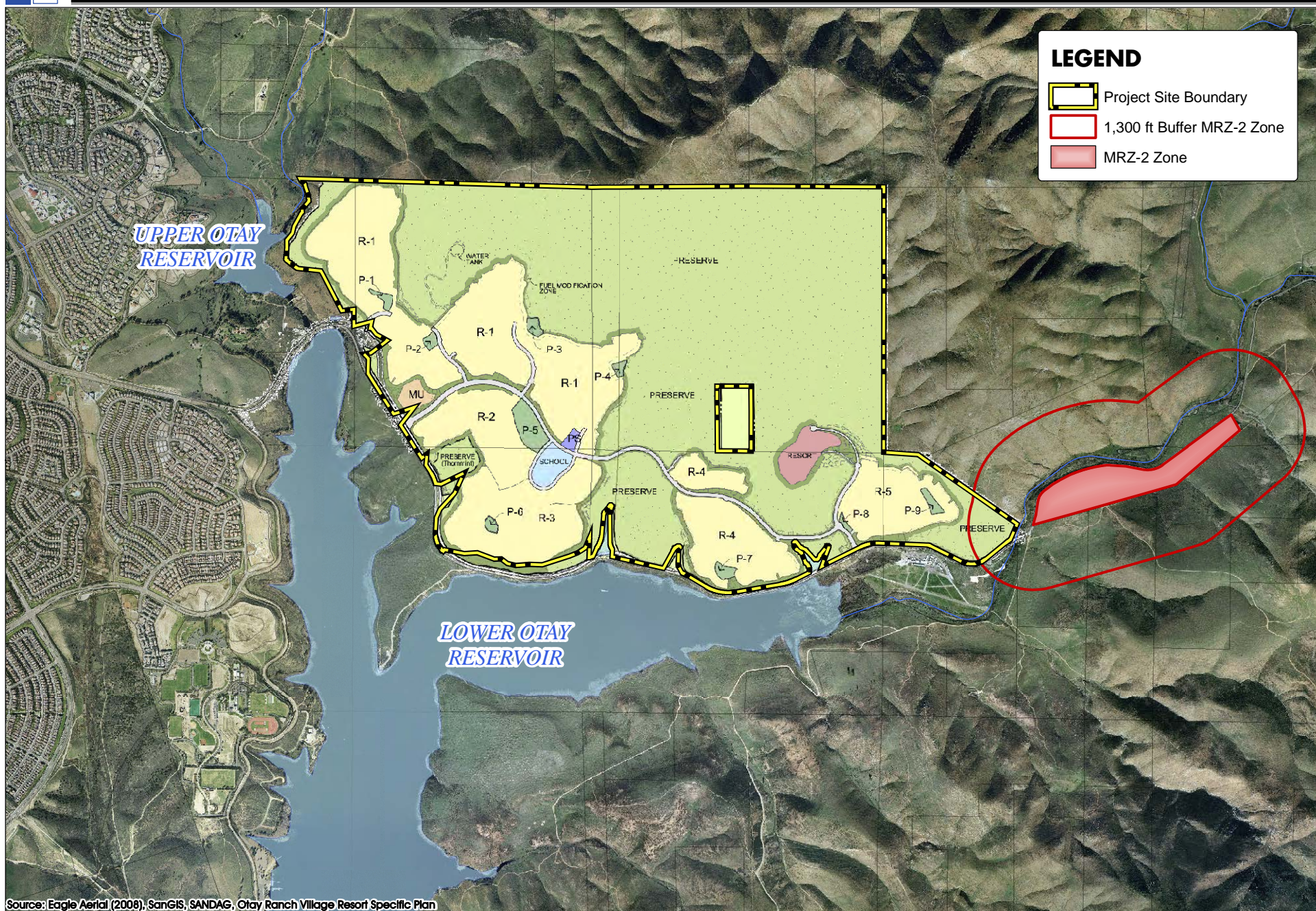
0 0.25 0.5 1
Miles

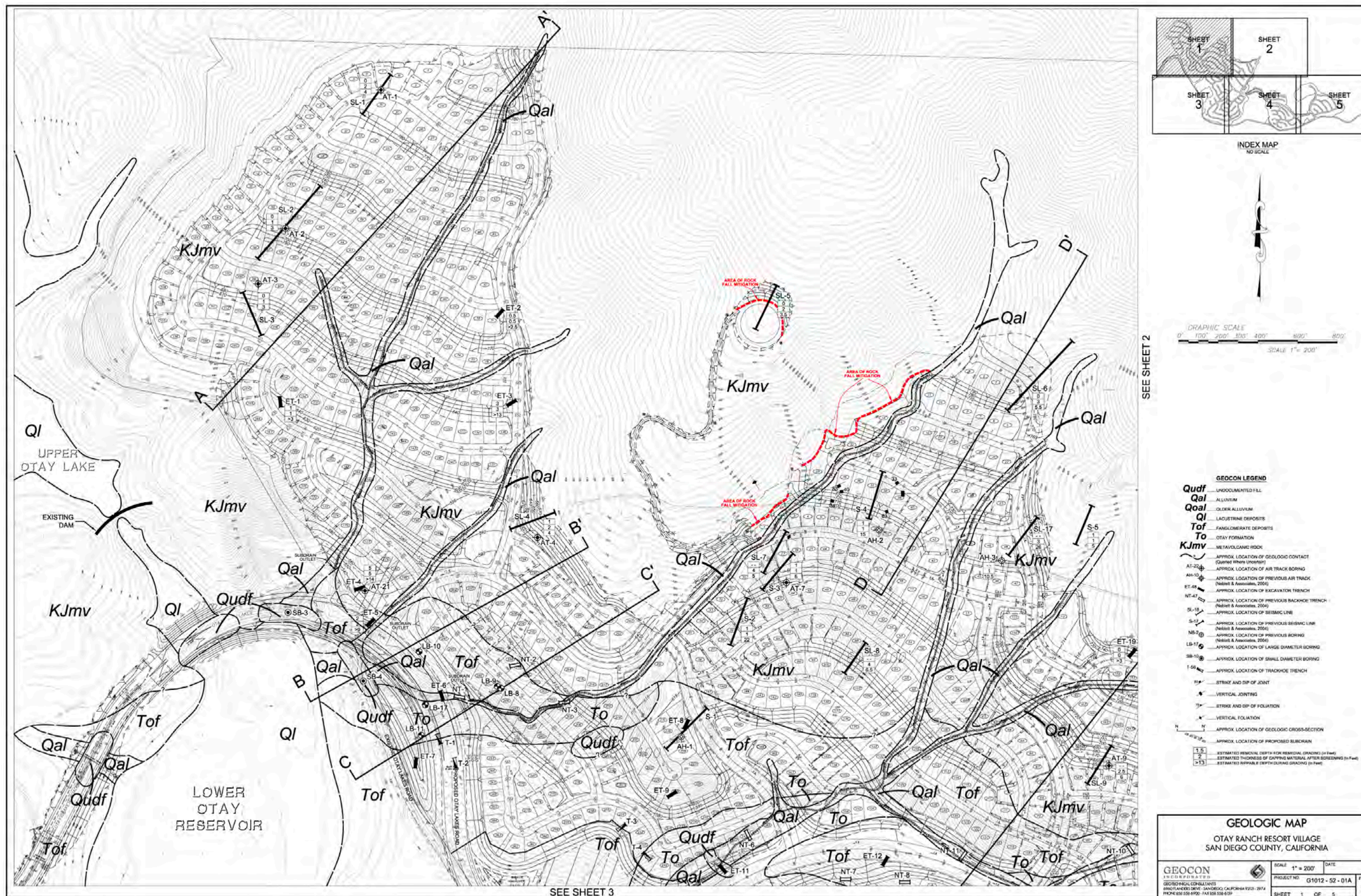


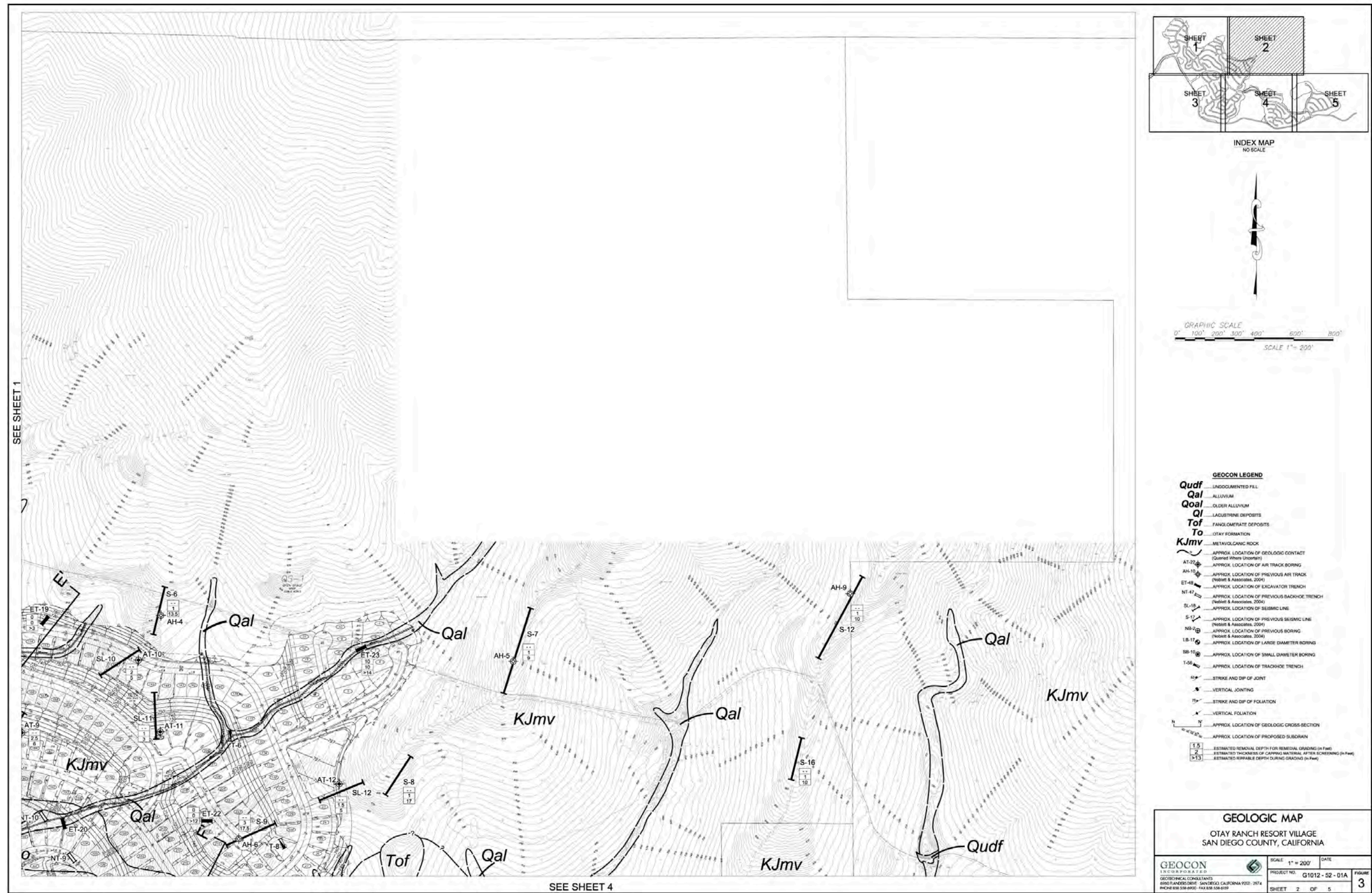


Source: Eagle Aerial (2008), SANGIS, SANDAG

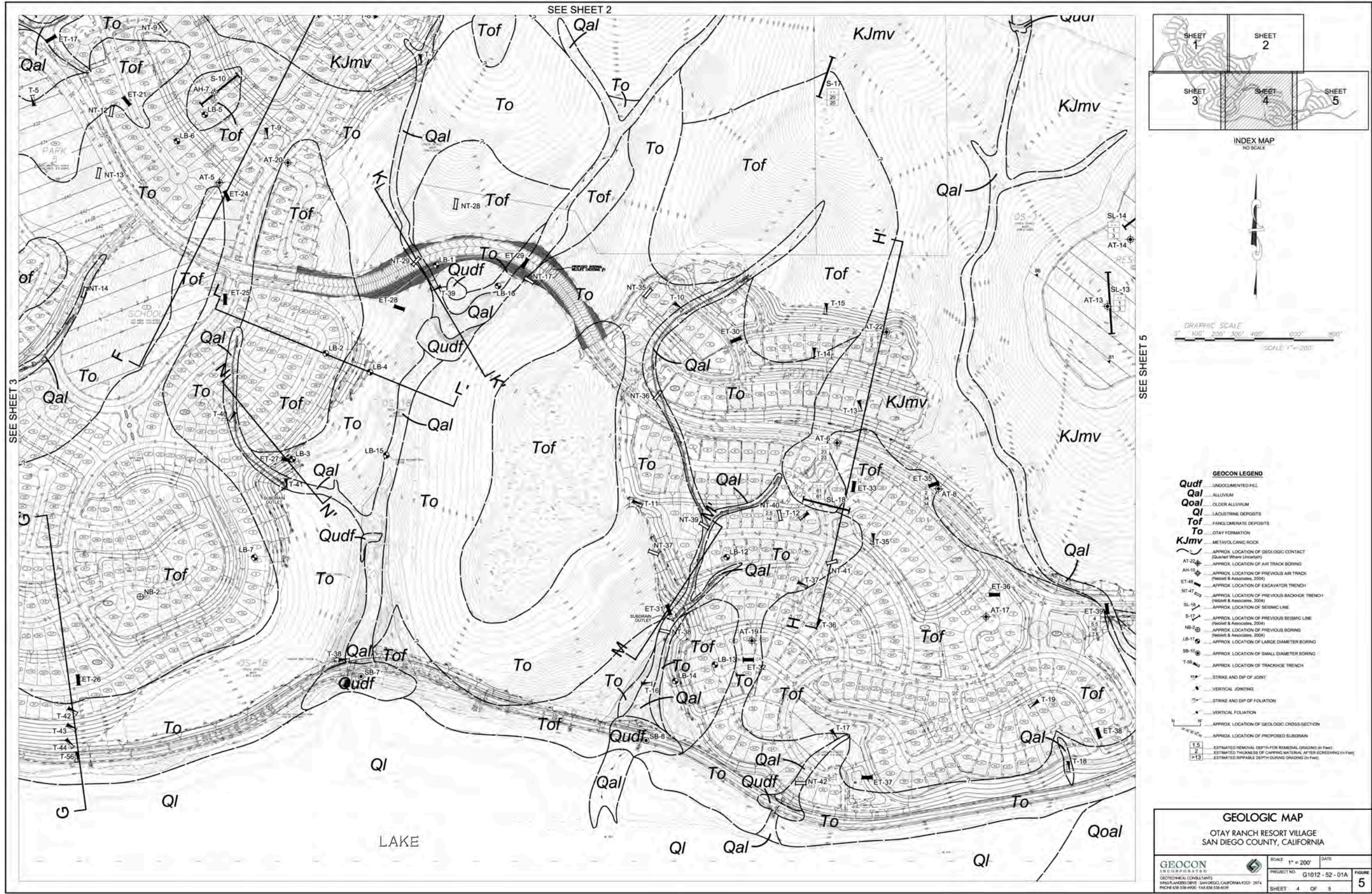












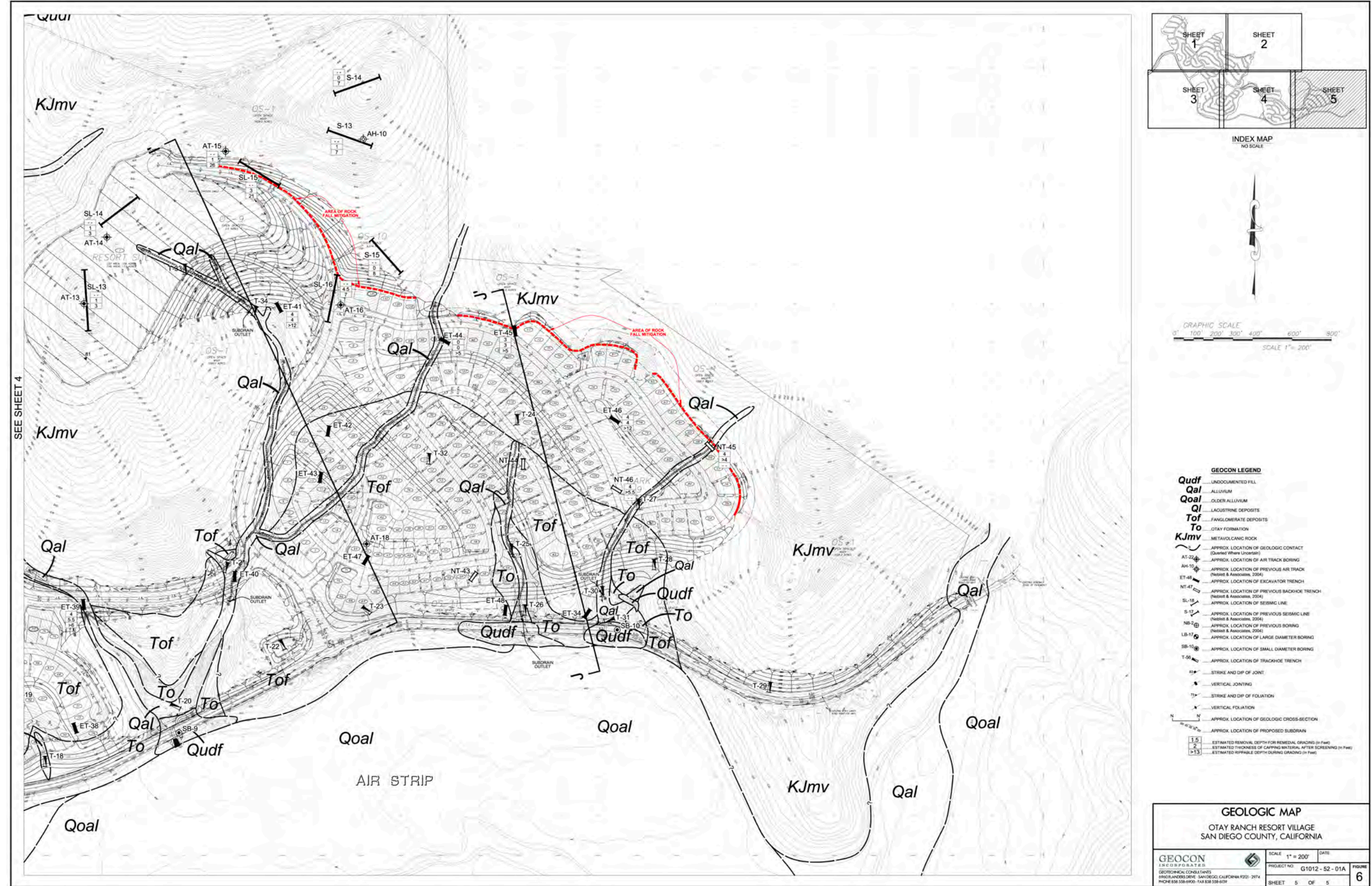


FIGURE 13



3.0 Mineral Resource Impact Analysis

3.1 Guidelines for Determination of Significance

A project will generally be considered to have a significant effect if it proposes any of the following, absent specific evidence to the contrary. Conversely, if a project does not propose any of the following, it will generally not be considered to have a significant effect on mineral resources, absent specific evidence of such an effect.

1. *The project is:*

- *On or within the vicinity (generally up to 1,300 feet from the site) of an area classified as MRZ-2; or*
- *On land classified as MRZ-3; or*
- *Underlain by Quaternary alluvium; or*
- *On a known sand and gravel mine, quarry, or gemstone deposit*

AND

The project will result in the permanent loss of availability of a known mineral resource that would be of value to the region and the residents of the state;

AND

The deposit is minable, processable, and marketable under the technologic and economic conditions that exist at present or which can be estimated to exist in the next 50 years and meets or exceeds one or more of the following minimum values (in 1998 equivalent dollars):

- | | |
|---|---------------------|
| • <i>Construction materials (sand and gravel, crushed rock)</i> | <i>\$12,500,000</i> |
| • <i>Industrial and chemical mineral materials (limestone, dolomite, and marble [except where used as construction aggregate]; specialty sands, clays, phosphate, borates and gypsum, feldspar, talc, building stone and dimension stone)</i> | <i>\$2,500,000</i> |
| • <i>Metallic and rare minerals (precious metals [gold, silver, platinum], iron and other ferro-alloy metals, copper, lead, zinc, uranium, rare earths, gemstones and semi-precious materials, and optical-grade calcite)</i> | <i>\$1,250,000</i> |

2. *The project would result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.*

Significance Threshold 1 addresses CEQA Guidelines Appendix G, Section X, Question “A,” which requires an analysis of a project’s potential to result in the loss of known mineral resources that



would be of value to the region and the residents of the state. A significant impact would occur if these important resources were to become permanently inaccessible and the resources have been determined to be minable, processable, and marketable under the technologic and economic conditions that exist at present or which can be estimated to reasonably exist in the future, while meeting minimum dollar values established by the State Geologist.

Significance Threshold 2 addresses CEQA Guidelines Appendix G, Section X, Question “B,” which requires an analysis of a project’s potential to result in the loss of availability of a locally important mineral resource recovery site. A significant impact would occur if a project proposed uses other than mineral resource extraction on lands identified by the County General Plan or County Zoning Ordinance as areas with economically extractable mineral resources.

3.2 Impact Analysis

The analysis in this section is based on the findings of a Project-specific geotechnical report prepared by Geocon, Inc., and a mineral resources technical review conducted by SoilWorks Earth Sciences Group.

3.2.1 *Land Use Compatibility*

The proposed Project would develop the property with single-family residential neighborhoods, a mixed-use residential and commercial neighborhood, a resort hotel with associated ancillary facilities, an elementary school site, a site for public safety facilities, parks, open space, and preserve land. The land uses proposed for the property are sensitive to environmental issues associated with mining, including effects related to noise, traffic, air quality and visual quality. Accordingly, upon development the proposed Project would be incompatible with on- or off-site mineral resource extractive uses and on-site resources would be inaccessible for future extraction.

A. On-Site Impacts from Proposed On-Site Land Uses

☐ *Known Mineral Resource Area (Threshold 1)*

The Project site is undeveloped under existing conditions. The property has not historically been used as a mine or quarry and no mine or quarry is located on-site under existing conditions. Furthermore, the Project site is located in an uncategorized zone and does not contain a MRZ classification. Therefore, implementation of the proposed Project would not directly impact a known mine, quarry, or mineral resource deposit that would be of value to the region and the residents of the state.

☐ *Locally Designated Mineral Resource Area (Threshold 2)*

Territory within unincorporated San Diego County with known, existing, or potential mineral resources are designated by the County General Plan as “(24) Impact Sensitive” or “(25) Extractive.” It is important to note, however, that the “(24) Impact Sensitive” land use designation does not always correspond with a mineral resources classification; in some cases this land use designation is applied to areas with environmentally sensitive resources. As depicted on Figure 5, the Otay Subregional Plan of the San Diego County General Plan designates the Project site as “(18) Multiple Rural Use,” “(21) Specific Plan Area,” and “(24) Impact Sensitive.” The Project site does not include area designated as “(25) Extractive.” Areas designated by the County as “(18) Multiple Rural Use” and “(21) Specific Plan Area” typically are not associated with known mineral resource



deposits. The Project site does include territory with the “(24) Impact Sensitive” land use designation (which can correlate with a mineral resource classification); however, as discussed above in Section 2.2.1, the Otay SRP applies the “(24) Impact Sensitive” designation to areas on the Project site to protect sensitive biological resources and environmentally sensitive areas, such as scenic bluffs and steep slopes, and is not intended to protect known or potential mineral resource deposits. Accordingly, implementation of the proposed Project would not impact territory designated by the County General Plan for mineral resource extractive uses and, therefore, would not result in the permanent loss of availability of a locally-important mineral resource recovery site.

Per the San Diego County Zoning Ordinance, mining and extractive uses are allowed within the “S82 (Extractive Use)” zone. As depicted on Figure 6, the southern portion of the Project site is zoned “S88 (Specific Plan)” and the northern portion of the Project site is zoned “S87 (Limited Control).” The Project site does not include any territory zoned “S82 (Extractive Use).” Therefore, implementation of the Project would not result in the permanent loss of availability of a locally-important mineral resource recovery site.

B. On-Site Impacts from Off-Site Land Uses (Threshold 1)

Although the Project does not propose mining or quarry uses on-site, there are no incompatible land uses in the immediate vicinity of the Project site (*i.e.*, within 1,300 feet) that would make mineral resources on-site inaccessible for extraction. Mining operations generally require a setback of approximately 1,300 feet from incompatible land uses (residential, industrial, commercial) to minimize and/or avoid adverse effects associated with mining, which include, but are not limited to, noise, traffic, air quality, and visual quality impacts. Areas north of the site are characterized by undeveloped, natural hillsides and bluffs. An airfield, John Nichol’s Field, used for gliders and ultralight aircraft is located south of the site. The Lower Otay Lake is also located south of the site. Territory to the immediate east of the property is primarily comprised of undeveloped, natural hillsides; however, a quarry that is no longer in operation is located near the southeast corner of the site. The Upper Otay Lake is located immediately west of the site. Existing residential development is located farther west of the property; however, this development is located more than 1,300 feet from the Project site and would not be incompatible with mineral resource extraction on the property.

It is important to note that much of the Project site is geometrically oriented such that a large-scale, commercial mining operation would be visible from existing residential development to the west of the site, Upper and Lower Otay Lake, and local scenic drive corridors. Due to the orientation and topographic character of the site, it is unlikely that the visual impacts and related degradation created by a large-scale mining operation could be feasibly mitigated.

C. Off-Site Impacts (Threshold 1)

Mining operations generally require a setback of approximately 1,300 feet from incompatible land uses (residential, industrial, commercial) to minimize and/or avoid adverse effects associated with mining, which include, but are not limited to, noise, traffic, air quality, and visual quality impacts. Accordingly, a significant impact would occur if the Project would introduce incompatible land uses within 1,300 feet of known, existing or potential off-site mining operations, thereby indirectly making off-site mineral resources inaccessible.



The Project site is located in the vicinity of the Jamul Quarry, which is designated as a MRZ-2 zone. As depicted on Figure 8, an approximately 16-acre portion of the property, in the extreme southeastern corner of the site, is located within the 1,300-foot buffer from MRZ-2 areas. Upon development of the proposed Project, on-site areas within the 1,300-foot buffer from MRZ-2 areas would be preserved as natural habitat; no incompatible land uses would be developed in the vicinity of a designated mineral resource area. Furthermore, the Jamul Quarry is no longer in operation; therefore, the Project would have no potential to introduce incompatible land uses in the immediate vicinity of a known, active quarry. Accordingly, implementation of the Project would not result in the permanent loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

3.2.2 Marketability (Threshold 1)

The geologic mapping and subsurface exploration performed by the project geotechnical consultant indicates that the site is underlain with several deposits that have the potential to be classified as important mineral resources, including: quaternary alluvium, fanglomerate deposits, and metavolcanic rock. The extraction of these resources has the potential to provide an economic benefit to San Diego County. The analysis below provides an evaluation of whether on-site geologic deposits are minable, processable, and marketable under the technologic and economic conditions that exist at present or which are estimated to reasonably exist in the future.

A. Quaternary Alluvium

Quaternary alluvium is one of the most important mineral resources in San Diego County, as sand and gravel can be easily extracted from this geologic environment and processed for use in construction materials. Alluvial channel soils underlie the drainage courses that traverse the Project site; however, the Project site lacks well developed alluvium deposits, as these soils are limited in occurrence and extent on-site and typically range between two (2) and 10 feet in thickness. Furthermore, preliminary laboratory testing indicates that these soils tend to have deleterious quantities of silts and clays, which would preclude the use of these deposits for fine aggregates. Accordingly, the Project site does not contain significant minable, processable, and marketable deposits of quaternary alluvium.

B. Fanglomerate Deposits

Fanglomerate deposits are a late Tertiary to Pleistocene-age sedimentary rock type that can be quarried for use as construction materials (sand, gravel, crushed rock). Based on the subsurface exploration of the site, the fanglomerate deposits are primarily composed of undersized clasts and contain a low percentage of clasts of the size and character that would be suitable for commercial use (due to composition and weathering). Segregation and processing of these deposits would be arduous and uneconomical, and would produce significant waste. Therefore, on-site fanglomerate deposits are evaluated as a less than significant mineral resource, with little potential to be minable, processable, and marketable under existing conditions or reasonably foreseeable future conditions.

C. Metavolcanic Rock

Metavolcanic rocks can be quarried for use as coarse aggregates, which are typically used during construction as concrete, riprap, and decorative and/or dimension stone. On-site deposits of metavolcanic rocks vary in hardness, lithology and/or degree of weathering, especially in the upper



20-50 feet of this geologic environment. Due to various lava/magma flow structures and possible volcanic tuffaceous interbeds within on-site deposits of metavolcanic rock and the probable presence of detrimental alteration minerals, such as epidote and chlorite, it is likely that on-site metavolcanic rock deposits would not be suitable for economic development as PCC-grade aggregate or Class 1 base. Furthermore, the weathered “halo” of this deposit generally extends to significant depths; therefore, the upper portion of this deposit would be unsuitable for commercial use. Air hammer borings and shallow refraction seismic lines indicate that materials below the weathered “halo” may be suitable for PCC-grade aggregate and Class 1 base; however, these materials would require deep excavation with excessive overburden and would, therefore, be uneconomical. Accordingly, and based on this analysis, it is determined that the Project site would produce very limited quantities of rock and related aggregate materials and does not contain significant deposits of minable, processable, and marketable metavolcanic rock.

3.2.3 *Minimum Dollar Value (Threshold 1)*

As described above in Section 3.2.2, the Project site contains relatively low-quality deposits of alluvium, fanglomerate, and metavolcanic rock that are highly unlikely to exceed a value of \$12,500,000. Furthermore, on-site geologic deposits would be arduous and uneconomical to mine and process. As such, the property would not be a commercially valuable source of deposits used for construction materials (sand, gravel, crushed rock) and implementation of the Project would result in less than significant impacts to mineral resources.

3.3 Significance of Impacts Prior to Mitigation

As documented in the preceding sections, implementation of the proposed Project would not result in any significant, adverse impacts to mineral resources.

3.4 Mitigation Measures and Design Considerations

As a result of the analysis contained herein, it has been determined that implementation of the proposed Project would not require any Project-specific mitigation measures or design measures because significant impacts to mineral resources would not occur.

3.5 Conclusion

The Project would not result in the permanent loss of availability of a known mineral resource that would be of value to the region and its residents of the state because: 1) the Project would not develop incompatible land uses in the vicinity on an area classified as MRZ-2; 2) the Project site does not contain a MRZ classification; 3) the Project site does not contain a known mine or quarry; and 4) the alluvium, fanglomerate, and metavolcanic rock deposits that underlie the site are of low quality and would not be suitable for use as construction materials. In addition, the implementation of the Project would not result in the loss of availability of a locally-important mineral resource recovery site, as the site and the immediate surroundings are not designated as an important mineral resource site by a local general plan, specific plan, or other land use plan. Accordingly, implementation of the Project would result in less than significant impacts to mineral resources and mitigation would not be required.



4.0 References

County of San Diego, 1983a, San Diego County General Plan Otay Subregional Plan, adopted May 18, 1983, Amended July 27, 1994.

County of San Diego, 1983b, General Plan Land Use Map: Otay Community Planning Area, adopted May 18, 1983, Amended July 27, 1994.

County of San Diego, 2007, Report Format and Content Requirements, Mineral Resources: Land Use and Environmental Group, Department of Planning and Land Use, dated July 30, 2007.

County of San Diego, 2008, Guidelines for Determining Significance, Mineral Resources: Land Use and Environmental Group, Department of Planning and Land Use, dated July 30, 2008.

Geocon, Inc., 2010, Preliminary Geotechnical Investigation Otay Ranch Resort Village, San Diego County, California, draft report dated March 19, 2010.

Soilworks Earth Sciences Group, 2010, Otay Ranch Resort Mineral Resources Executive Summary Memorandum, dated March 24, 2010.



5.0 List of Preparers and Persons and Organizations Contacted

Document Preparers

Jeramey Harding
David Ornelas

Persons Consulted

Geocon, Inc.
John Hoobs, CEG

SoilWorks Earth Sciences Group
Larry E. Fanning, CEG
Daniel J. Morikawa, GE