GEOLOGICAL FAULT HAZARD INVESTIGATION, PROPOSED ±5-ACRE PARCEL, APN 362-250-003, WILDOMAR, RIVERSIDE COUNTY, CALIFORNIA

Prepared For:

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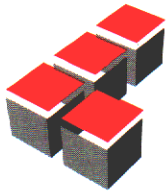
September 19, 2005

Project No. 601027-002



Leighton Consulting, Inc.
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Project No. 601027-002

To: Mr. Reza Zolfaghari
C/o Mr. Reza Kassaraian
MRK Commercial
23821 Hillhurst Drive, Suite 29
Laguna Niguel, California 92677

Attention: Mr. Reza Zolfaghari

Subject: Geological Fault Investigation, Proposed ±5-Acre Parcel, APN 362-250-003, Wildomar, Riverside County, California

In response to your request and authorization, Leighton Consulting, Inc. (LCI) has performed a subsurface fault investigation for the proposed commercial development site. The project site (APN 362-250-003) encompasses approximately 5-acres located northeast of the intersection of Clinton Keith Road and George Avenue, in the Wildomar area of unincorporated Riverside County, California (see Figure 1 – Site Location Map). The area encompassing our investigation included the limits of the project site and the ±5-acre parcel adjoining the site to the immediate east (APN 362-250-004). The purpose of this investigation was to determine if any active or potentially active earthquake faults exist within the boundaries of the project site. The preliminary conclusions and recommendations provided herein are based on our analysis of aerial photographs, review of readily available published geologic maps and reports, and field mapping of approximately 1,250 linear feet of exploratory trench exposures in the area of the subject site. A zone of active faulting was identified at the site and a restricted use, building setback zone is recommended. Our fault investigation was coordinated with and reviewed by the Riverside County Geologist, Mr. David Jones. This report summarizes our findings, conclusions, and recommendations regarding the on-site faulting and surface rupture hazard considerations.

We appreciate this opportunity to be of service to you on this project. If you have any questions regarding this report or need any additional information, please contact the undersigned.

Respectfully submitted,
LEIGHTON CONSULTING, INC.

Mitchel S. Bornyasz
Project Geologist, P.G. # 7973

Distribution: (2) Addressee
(2) Riverside County Planning Department; Attention: Mr. David Jones

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Leighton

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1.0 INTRODUCTION

This report presents the findings of our geological fault investigation for the subject site (APN 362-250-003). The ~5-acre site is located northeast of the intersection of Clinton Keith Road and George Avenue, in the Wildomar area of unincorporated Riverside County, California (see Figure 1 – Site Location Map). Additional geologic information for this study was collected by supplemental investigation of the adjoining ~5-acre parcel to the immediate east of the site (APN 362-250-004). No known plans for future development of the eastern (supplemental) area were available at the time of this report. A letter authorizing our investigation of parcel APN 362-250-004 is attached in the Appendix of this report.

The project area lies approximately 0.7 miles northeast of the nearest Alquist-Priolo Earthquake Fault Zone. Alquist-Priolo Fault Zones are believed to contain "active faults", unless proven otherwise by a detailed geological investigation. The California Geologic Survey (CGS) defines an "active fault" as one that has had surface displacement within the Holocene Epoch (roughly the last 11,000 years).

A previous geotechnical investigation of the property to the immediate northwest of the site exposed an active fault outside of the Alquist-Priolo Earthquake Fault Zone (Byerly, 2003; Rasmussen, 2003). The trend of that fault projects in a southeast direction towards the subject site's boundaries from the northwest. Accordingly, the primary purpose of this investigation was to determine if active faulting exists on the subject site and the suitability of the site for future commercial development from the standpoint of potential fault surface rupture.

1.1 Purpose and Scope

Our scope of services for this investigation included the following items:

- Excavation of six fault trenches (±1250 feet in total length) across the limits of the southeastward projection of the adjacent fault.
- Detailed examination and logging of the geologic conditions and materials observed in the fault trench.
- Review aerial photographs of the project site and adjacent areas.
- Site reconnaissance to observe and document the current surface conditions and geomorphology of the subject property and adjacent areas.
- Geotechnical review of the fault investigations performed by others in the local area.
- Analysis and review of the geologic conditions and materials observed in the fault trench including, faulting, fissuring features; and the determination of potential ground rupture.
- Preparation of this report, presenting our findings, conclusions and recommendations regarding faulting, proposed structural setback(s), and secondary seismic hazards.

1.2 Aerial Photographs

A detailed review of sequential pairs of aerial photographs (Appendix A) was performed. A magnifying stereoscope was utilized to enhance the visibility of geomorphic features During the course of this review, a northwest trending photo lineament was identified crossing the northern portion of the site (Figure 2 – *Fault trench Location Map*). The photo lineament generally coincides with the previously identified projection of the fault trace as depicted on the Fault Hazard Map prepared by Rasmussen for the site to the northwest (Plate 1, Rasmussen, 2003). The readily identifiable lineament observed in the photographs consists of alignments of topographic breaks and tonal contrasts. Trenching of the fault zone and suspected fault trace observed in the aerial photos exposed splays of the fault coincident with the observed lineament. No other suspect geological structures within the photographs were identified within the project area.

1.3 Subsurface Field Investigation

Six exploratory fault trenches were excavated over a period of two-weeks utilizing a rubber-tired backhoe. The locations of the fault trenches are indicated on the *Fault Trench Location Map,* Figure 2 and on Figure 3, *Fault Location Map*. Materials encountered, are described in the text and illustrated on the *Fault Trench Log*s contained in Appendix B. The trenches were excavated a minimum width of four feet, and benched symmetrically upwards in general accordance with current OSHA guidelines. The depth of the exploratory fault trenches were based in order to expose suspected fault features in relatively unweatherd bedrock or alluvial materials. Field review of the fault trenches was conducted by the Riverside County Geologist, Mr. David Jones. After field documentation and review, the trenches located within the eastern parcel (LFT-2, LFT-3, LFT-4, and LFT-5) were subsequently backfilled with non-engineered fill generated from the excavation spoils by the backhoe. The trench backfill materials were densified with a mechanical compaction wheel during the backfill process. At your direction, the trenches on the western parcel (LFT-1 and LFT-6) were left open.

1.4 Previous Site Investigations

A previous investigation was completed to the immediate northwest of the site by John R Byerly, Inc., August 12, 2003, (Byerly, 2003) and is appended with a fault investigation by Gary S. Rasmussen & Associates on July 31, 2003, (Rasmussen, 2003). The property to the south of the subject site was also previously investigated by NorCal Engineering on November 26, 2003 (NorCal, 2003) and is appended by a fault investigation by Gail Hunt on January 28, 2005, (Hunt, 2005). Each of these reports was reviewed and their findings referenced in the course of this investigation. These investigations aided in the determination as to the locations and depths of exploratory excavations, and the general morphology of faulting.

2.0 SUMMARY OF GEOTECHNICAL FINDINGS

2.1 Proposed Development and Site Description

Although no grading plans were available at the time of this study, we anticipate that site grading will include a moderate depth of cut and fill, possibly on the order of 10 to 20 feet. We anticipate conventional cut and fill grading will be utilized to construct the graded commercial pads and parking/drive areas.

The property is situated north of and adjacent to Clinton Keith Road and east of George Avenue in the Wildomar area of Riverside County, California (see Figure 1). The property is roughly rectangular in shape and borders a ephemeral drainage to the west.

Topographically, the site can be characterized as moderately hilly with a southwest sloping surface and west facing drainage. Elevations range from approximately 1,340 feet above mean sea level (msl) along the western boundary to approximately 1,360 feet (msl) near the eastern boundary. The site was undeveloped at the time of our investigation and occupied by brush, grass, and localized piles of various debris from undocumented dumping activities. Surface disturbance from agricultural activities, brush clearance, and the realignment of Catt Road during construction of the modern Clinton Keith roadway were evident in our review of the aerial photographs.

2.2 Regional Geology

The site is located in the Peninsular Range Geomorphic Province of California. More specifically, the property is located along the eastern flank of a fault controlled, down dropped graben, known as the Elsinore Trough (Kennedy, 1977). The active Wildomar fault strand of the Elsinore Fault Zone, forms a part of the eastern margin of the graben in this area and the Glen Ivy North segment of the fault zone extends along the eastern margin of the trough to the northwest from the site, see Figure 4, *Local Geologic Map*. The Elsinore Fault Zone extends from the San Gabriel River Valley southeasterly to beyond the United States-Mexico border.

The Santa Ana Mountains lie along the western side of the Elsinore Fault Zone and the Perris Block is located along the eastern side of the fault zone. The mountain ranges are underlain by pre-Cretaceous metasedimentary and metavolcanic rocks and Cretaceous plutonic rocks of the Southern California batholith. Tertiary sediments, volcanics and Quaternary sediments flank the mountain ranges. The Tertiary and Quaternary rocks are generally comprised of non-marine sediments consisting of sandstones, mudstones, conglomerates, and localized volcanic units.

2.3 Site Geologic Units

The earth materials encountered consisted of undocumented artificial fill, alluvium, and sedimentary bedrock of the Pauba Formation. These units are discussed in the following sections in order of increasing age.

2.3.1 Undocumented Artificial Fill (Symbol Afu)

Artificial fill materials consisting of reworked and compacted (undocumented) native and possibly imported soils exist within the areas of trenches LFT-3 and LFT-5 in the eastern area of the investigation. The fill materials observed roughly coincide with the previous alignment of Catt Road (prior to construction Clinton Keith Road) seen in our review of aerial photographs. The undocumented fill material should be considered unsuitable to support any future engineered fill in it's current condition.

2.3.2 Alluvium (Symbol Qal)

Near surface alluvium was encountered in the westernmost fault trench excavated at the site (trench LFT-1). The alluvial deposits generally consist of very dark grayish brown to brown (10YR 5/2 – 7.5YR4/4), medium dense, damp to moist, medium grain SAND (SP) to silty SAND (SM). In the vicinity of fault trench LFT-1, the alluvium occupies a ephemeral drainage bottom and forms an approximately 10 to 15 foot thick deposit overlying the Pauba Formation bedrock.

In situ weathering and subsequent soil profile (pedogenic) development within the alluvium has resulted in the formation of a sub-surface argillic soil horizon (Bt horizon) of up to three feet in thickness. The relative strength of the soil development (abundance of secondary clay accumulation and reddening) suggests that the alluvial deposits in this area may be at least early to middle Holocene in age (Millman and Rockwell, 1986, Bornyasz and Rockwell, 1997). An approximately 1 to 2 foot thick layer of topsoil mantles the alluvium and related soils within the drainage area.

2.3.2 Pauba Formatiom (Symbol Qp)

The late Pleistocene-aged Pauba Formation was encountered within all the trenches excavated for this study (see Appendix B). As exposed during our investigation, this sedimentary bedrock unit is generally characterized by very pale brown to brown to pale yellow (10YR 7/4 – 7.5YR 4/4 – 7.5YR 7/4), dry to moist, dense to stiff, indurated, massive silty SANDSTONE to SANDSTONE to minor amounts of CLAY (CL), with numerous accumulations of calcium carbonate lined fractures and disseminated nodules.

A soil of inferred late Pleistocene age has formed within the near-surface Paubla deposits where they are exposed on stable landscape surfaces across the site. The antiquity of this

soil is supported by the presence of thick, clay-rich Bt horizons of translocated clay accumulation and strong reddening of the subsurface soil to 7.5YR hues (Millman and Rockwell, 1986, Bornyasz and Rockwell, 1997). The clear to abrupt soil horizon boundaries within the profiles observed were used as secondary stratigraphic markers in the identification of faulting displacements of the earth materials exposed in the trenches.

2.4 Regional Faulting and Fault Activity

The subject site, like the rest of Southern California, is located within a seismically active region as a result of being located near the active margin between the North American and Pacific tectonic plates. The principal source of seismic activity is movement along the northwest-trending regional fault systems such as the San Andreas, San Jacinto and Elsinore fault zones. Currently, these fault systems accommodate up to approximately 55 millimeters per year (mm/yr) of slip between the plates. The Elsinore Fault Zone is estimated to accommodate slip of approximately 5 mm/yr (WGCEP, 1995).

2.5 Faulting and Seismicity

As defined by the CGS, an active fault is one that has had surface displacement within the Holocene Epoch (roughly the last 11,000 years). The CGS has defined a potentially active fault as any fault, which has been active during the Quaternary Period (approximately the last 1,600,000 years).

These definitions are used in delineating Earthquake Fault Zones as mandated by the Alquist-Priolo Geologic Hazard Zones Act of 1972 and as subsequently revised in 1994, 1997, and 1999 (Hart, 1999), as the Alquist-Priolo Earthquake Fault Zoning Act and Earthquake Fault Zones. The intent of that act is to require fault investigations on sites located within Earthquake Fault Zones to preclude new construction of certain inhabited structures across the trace of active faults. While there is no currently established Alquist-Priolo Earthquake Fault Zone within the subject property, the presence of previously recognized fault activity in the area necessitates investigations of a similar nature.

2.5.1 Local Fault Activity

The Wildomar Fault, documented in other nearby investigations as well as published state and federal reports, is considered to be an active (Holocene) fault, and is approximately 0.7 miles southwest of the site's southwest boundary, see Figure 4, *Local Geologic Map.* The recently recognized fault segment revealed during the investigation to the immediate northwest of the subject site is considered active as indicated by its documented displacement of late Holocene sediments (Rasmussen, 2003). That fault segment, which extends southeast into this subject site (Figure 2-*Fault Trench Location Map*), may be a southern extension of the Glen Ivy (North) fault. Research of on the Glen Ivy North Branch along its northern segment

revealed a record of several large surface rupture earthquake events in the latest pre-Historic to early Historic time (Rockwell et al., 1986)

Additional northwest-trending lineaments and associated potential faults were investigated to the immediate south of the subject site (Hunt, 2005). The faults exposed during that investigation were reported as "bedrock" faults of pre-Holocene age and therefore considered inactive. A suspect fault trace southeast of the site was documented as inactive based on soil chrono-stratigraphic relationships (Hunt, 2005). For reference, that fault trace is depicted on Figure 2- *Fault Trench Location Map*.

2.5.2 Fault Trenching

A total of approximately 1,250 lineal feet of exploratory fault trenches were excavated, cleaned, and logged in detail by geologists from this firm. Select fault trenches were subsequently field reviewed by the Riverside County Engineering Geologist. The locations of the fault trenches are shown on the *Fault Trench Location Map*, Figure 2 and Figure 3, *Fault Location Map*, included with this report. Trenches LFT-1 through LFT-3 were originally proposed and excavated to identify the potential faulting hazards addressed by this investigation. Due to the absence of faulting present in trench LFT-3, trenches LFT-4 through LFT-6 were subsequently excavated to better constrain the limits of active faulting within the area of this investigation.

Fault Trench 1 (Map Symbol LFT-1) - Fault Trench 1 was excavated to a maximum depth of 14 feet below ground surface (bgs), and a length of approximately 325 feet. FT-1 was located in the northwestern portion of the property across the width of the projected fault zone and recommended setbacks that were identified in the report for the adjacent site by Rassmusen (2003). Evidence of past seismic activity was readily apparent as an approximately 40-foot wide zone of offset deposits, associated shears, and in-filled fractures within the Pauba Formation, Quaternary alluvium, and near-surface soils. The location of the faults generally coincides with the southeastern projection of the fault zone from the previous investigation to the northwest. The orientation and character of faulting at this location is best described as a series of en echelon northwest-striking (N30-60°W), steeply southwest dipping fault planes and discreet shear zones that displace the bedrock and overlying alluvium downward to the southwest. Total offsets of deposits were indeterminate given the limits of the trenching for this investigation, however, maximum down-dip separation of bedrock units observed within the trench were on the order of 2.5 to 6 feet.

Fault Trench 2 (Map Symbol LFT-2) - Fault Trench 2 was located along the eastern margin of the 362-250-003 parcel boundary (the central portion of the overall area

of investigation). The trench was located across the projected alignment of the faulting reported from the site to the northwest and the faults observed in FT-1 (Figure 2). FT-2 was excavated to a maximum depth of 9 feet bgs, and a length of approximately 220 feet. An approximately 40-foot wide zone of active faults were identified within the central portion of the trench. The faults within this zone have an average trend approximately 45 degrees to the west of north (N45°W) and dip steeply to the southwest. The trench exposed bedrock of the Pauba Formation with a well-developed "Pleistocene" soil profile mantled by a horizon of topsoil at the surface. Approximately 1 foot of apparent vertical separation of the top of Pleistocene soil was observed across the fault(s) in this trench.

Fault Trench 3 (Map Symbol LFT-3) - Fault Trench 3 was located in the southeastern limits of the area of this investigation (along the eastern margin of parcel 362-250-004). Trench LFT-3 was excavated to a maximum depth of 10 feet bgs, and a length of approximately 270 feet. The trench exposed a discontinuous surface layer of artificial fill of variable thickness underlain by bedrock of the Pauba Formation with a well-developed "Pleistocene" soil profile. The ground surface prior to placement of the fill was indicated by the presence of a buried horizon of topsoil at the base of the fill. No evidence of past seismic activity was identified, within this trench. Stratigraphic marker units and contacts within the bedrock deposits and soils appeared to be unbroken within the limits of the trench.

Fault Trench 4 (Map Symbol LFT-4) - Fault Trench 4 was located approximately midway (~150 feet) between trenches LFT-2 and LFT-3 to determine the location and limits of faulting within the overall area of the investigation. The trench measured approximately 6 feet in depth by 160 feet long. Geologic units and soils present within the trench were similar to those exposed in LFT-2. An approximately 75 foot wide zone of faults were observed that offset bedding contacts within the Pauba Formation and broke upward into the argillic horizon of the overlying soil profile. A maximum of 2 to 3 inches of vertical separation were apparent within the upper portions of the faulted soil profile at this location.

Fault Trench 5 (Map Symbol LFT-5) - Fault Trench 5 was excavated approximately 50 feet east of trench LFT-4 in an attempt to constrain the limits of faulting. This trench exposed unbroken materials similar to those observed in LFT-3. No faulting or fault-related structures were observed within the LFT-5 trench exposure.

Fault Trench 6 (Map Symbol LFT-6) - Fault Trench LFT-6 was excavated between trenches LFT-1 and LFT-2 to assist in determining the location and limits of faulting within the proposed development area of the project (parcel 362-250-003). This trench measured approximately 5 feet in depth by 125 feet in length. The geologic deposits and soil within the trench were similar to those observed in

LFT-2. Faults breaking through the Pleistocene soil profile form a zone approximately 25 wide. Apparent vertical separation of approximately 2.5 feet was measured across the fault zone at the base of the argillic soil. The faults forming this zone have an average trend of approximately 68 to 83 degrees to the west of north (N68-83°W) and dip steeply to the southwest.

2.6 Secondary Seismic Hazards

Secondary hazards generally associated with severe ground shaking during an earthquake are ground rupture, liquefaction, seiches or tsunamis, flooding (dam or levee failure), landsliding, rock falls, and seismically-induced settlement. Liquefaction potential, inundation from seiches, tsunamis, flooding, landsliding, rockfalls, and estimated magnitude of seismic induced settlement was not a part of this investigation. However, prior to development these hazards should be investigated .

2.6.1 Ground Rupture

Ground rupture is generally considered most likely to occur along pre-existing active faults. Our review of previous investigations and data gathered during the current fault investigation has identified on-site, recent (Holocene) fault activity. As such, the potential for site ground rupture during a seismic event on the Glen Ivy North and/or Wildomar Fault is considered high.

Ground rupture cannot be ruled out for nearby faults in the event of sympathetic movement associated with displacement along the Elsinore Fault Zone, or other regional faults. Ground rupture could potentially affect existing and future facilities (such as gas, electrical, water mains and aqueducts) during a seismic event along the Elsinore Fault Zone.

3.0 CONCLUSIONS

Based on the results of this investigation, it is our opinion that future development of the project site is feasible from a geotechnical standpoint. The following recommendations should be incorporated into the design and grading plan.

- Based upon our current investigation, experience, observations of the near surface soil development, and bedrock materials exposed in our fault trenches, it is our opinion that there are active faults crossing the site.
- Specific structural (restricted use) setback provisions have been prepared. The limits of the recommended structural setback are presented on the accompanying Fault Location Map (Figure 3). Structures intended for human occupancy should **not** be located within the structural setback zone. California Code of Regulations, Section 3601 states, "A structure for human occupancy is any structure used or intended for supporting or sheltering any use of occupancy, which is expected to have a human occupancy rate of more than 2,000 person-hours per year" (CDMG, 1997).
- Strong ground shaking, and/or possible ground rupture may occur at this site due to local earthquake fault activity.
- Secondary seismic effects due to strong ground shaking were previously discussed in the geology section of this report. The potential for site ground rupture is considered high within the area of the fault zone identified within the site. A separate geotechnical investigation is recommended to analyze the liquefaction potential, inundation from seiches, tsunamis, or flooding, landsliding, rockfalls, and estimated magnitude of seismic induced settlement of the subject property.
- Evaluation of environmental conditions onsite (Phase 1 assessment) and a preliminary geotechnical investigation were beyond the scope of this study.

4.0 PRELIMINARY RECOMMENDATIONS

4.1 Structural Setback/Area Restrictions

The locations of the surface projection and limits of onsite active faults exposed in our trenches have been staked in the field and are shown on the accompanying Figure 2 - *Fault Location Map*. The fault locations should be surveyed by the project civil engineer and a 25 to 50 foot structural setback zone as indicated on the fault zone map should be established beyond the southern side of fault zone. A 50-foot wide structural setback zone as indicated on our map should be established beyond the northern side of fault zone. This fault setback zone is recommended for structures intended for human occupancy of 2000 hours/year or more. The limits of the recommended structural setbacks included in this report are for planing purposes only and do not take into account possible future grading design configurations. Leighton Consulting should review grading design plans prior to their finalization and site development.

5.0 GEOTECHNICAL REVIEW

Geotechnical review is of paramount importance in engineering practice. The poor performance of many foundation and earthwork projects have been attributed to inadequate construction review. We recommend that Leighton Consulting, Inc. be provided the opportunity to review the following items.

5.1 Plans and Specifications

Leighton Consulting, Inc. should review the project rough-grading plans as well as foundation plans and specifications prior to release for bidding and construction. Such review is necessary to evaluate whether the geotechnical recommendations have been effectively incorporated in plans and other construction documents. Review findings should be reported in writing. Depending on the results of a detailed plan review, additional subsurface evaluation may be warranted to develop or refine the seismic densification (settlement) values, estimated lateral deformation and structural setbacks for settlement sensitive improvements and remedial grading depths.

5.2 Construction Review

Observation and testing should be performed by Leighton Consulting, Inc. representatives during grading and construction. It should be anticipated that the substrata exposed during construction may vary from those encountered in this investigation. Reasonably continuous construction observation and review during site grading and foundation installation allows for evaluation of the actual soil conditions and possible fault locations and the ability to provide appropriate revisions during construction, if required.

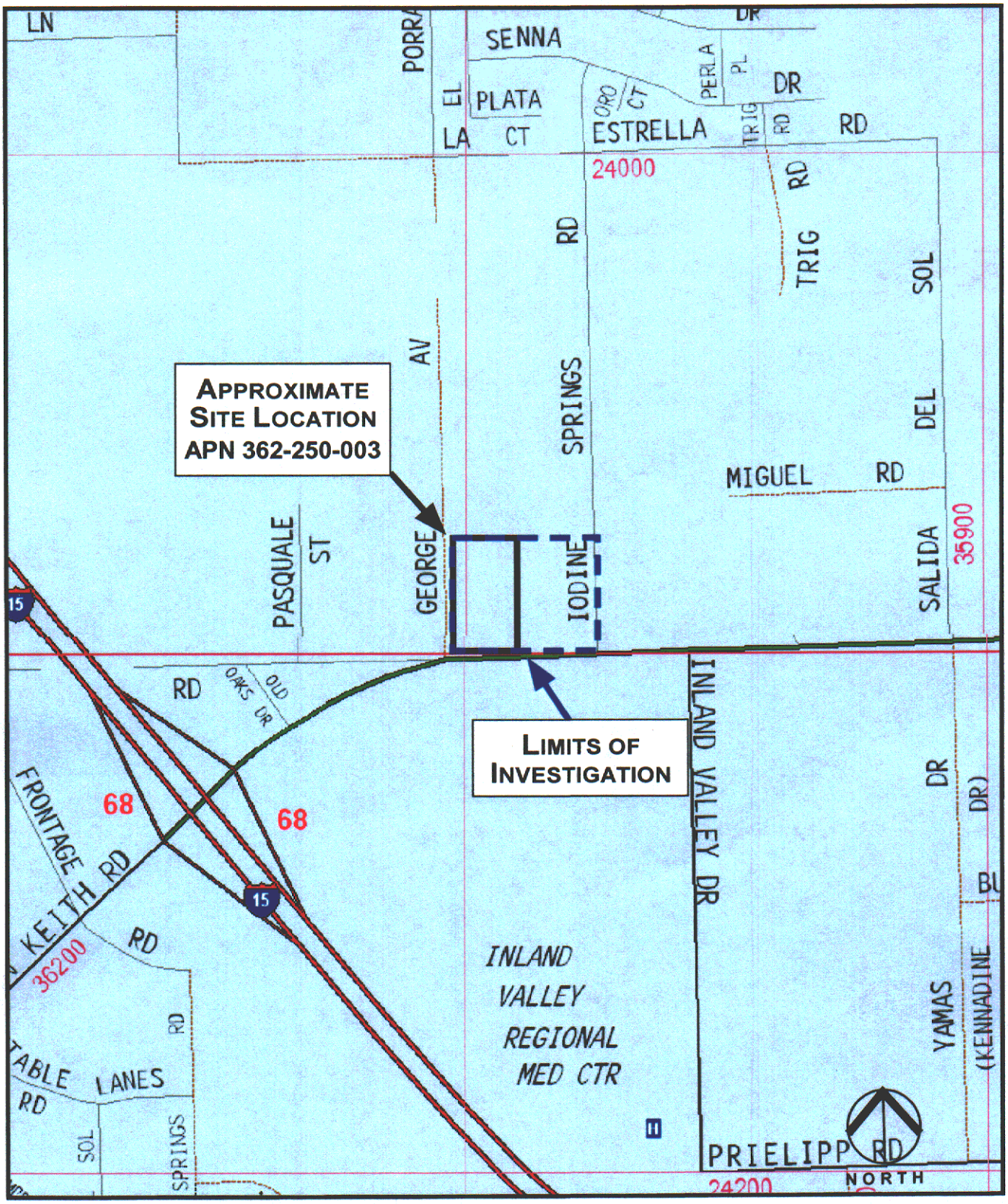
Site preparation, removal of unsuitable soils, approval of imported earth materials, fill placement, foundation installation and other site geotechnically-related operations should be observed and tested by representatives of Leighton Consulting, Inc.

Additional laboratory tests of subsurface materials should be performed during or prior to grading to confirm compacted density and moisture content, corrosion potential, expansion potential and resistance value (R-value).

6.0 LIMITATIONS

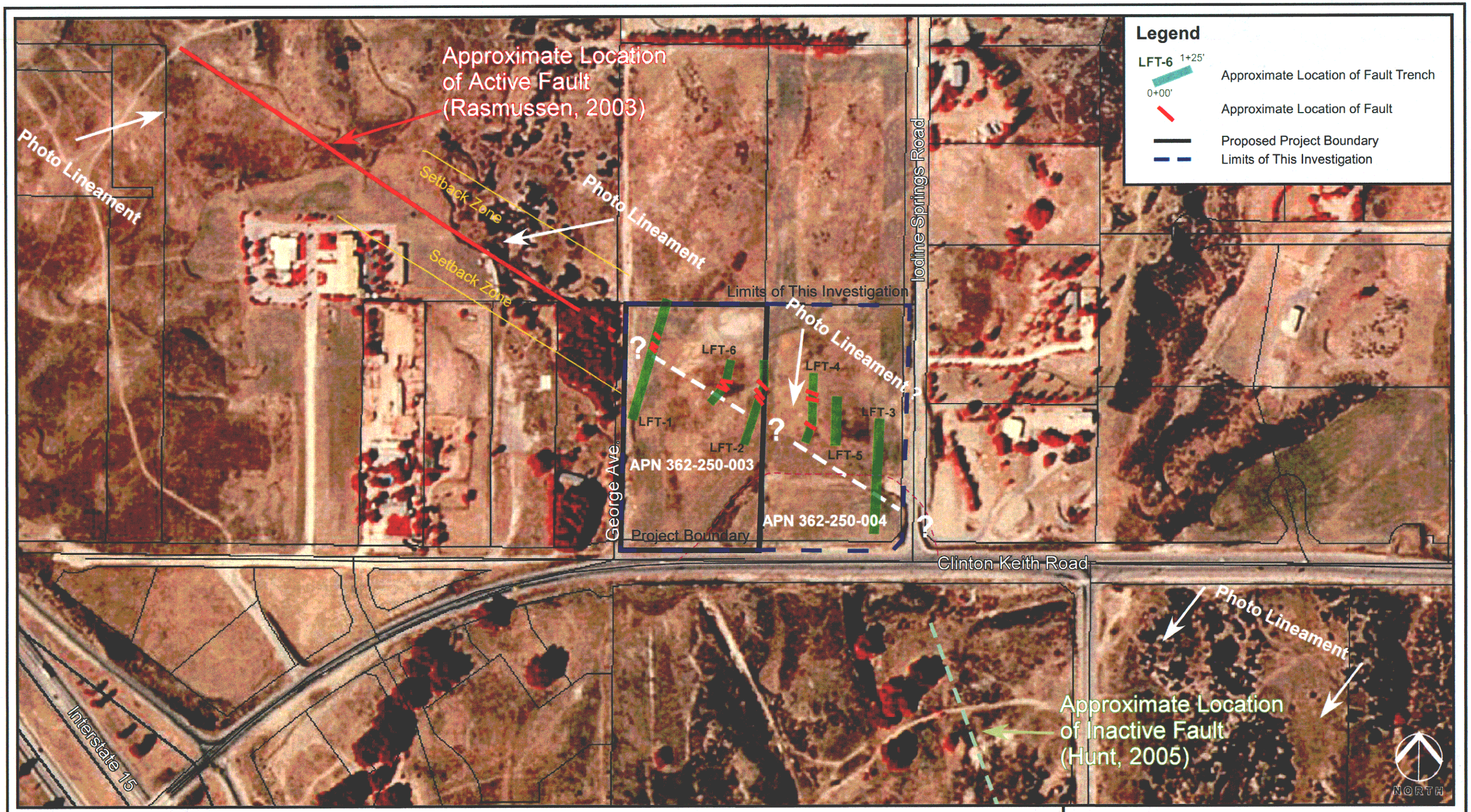
This report was necessarily based in part upon data obtained from a limited number of observances, site visits, analyses, histories of occurrences, and limited information on historical events and observations. Such information is necessarily incomplete. The nature of many sites is such that differing characteristics can be experienced within small distances and under various climatic conditions. Changes in subsurface conditions can and do occur over time. This report does not meet the State of California Uniform Building Code requirements for California Public Schools, Hospitals, or Essential Services Buildings.

This report was prepared for Mr. Reza Zolfaghari based on Mr. Zolfaghari's needs, directions, and requirements. This report is not authorized for use by, and is not to be relied upon by any party except Mr. Zolfaghari, and his successors and assigns as owner of the property, with whom Leighton Consulting, Inc. has contracted for the work. Use of or reliance on this report by any other party is at that party's risk. Unauthorized use of or reliance on this report constitutes an agreement to defend and indemnify Leighton Consulting, Inc. from and against any liability which may arise as a result of such use or reliance, regardless of any fault, negligence, or strict liability of Leighton Consulting, Inc.



Base Map: The Thomas Guide Digital Edition San Bernardino and Riverside, 2004, Not To Scale

Geologic Fault Investigation **5-Acre Parcel** **(APN 362-250-003 & 004)** Riverside County, California	**SITE LOCATION MAP**	Project No. **601027-002** Date **September 2005** Figure No. 1



Base Map Modified From: Riverside County, Land Information System V2, 2004

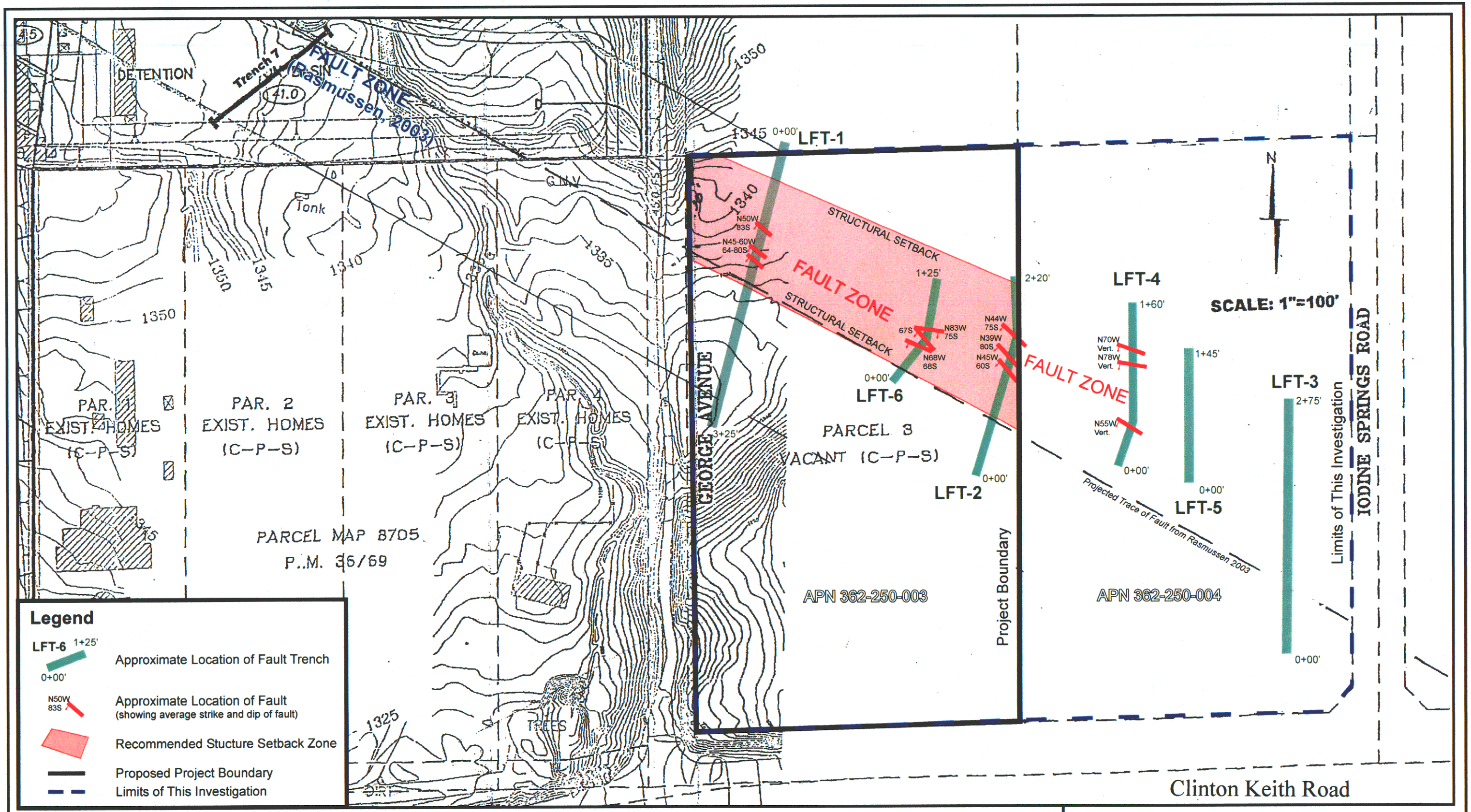
TRENCH LOCATION MAP

Geologic Fault Investigation

Assessor Parcel Numbers 362-250-003 & 362-250-004, Wildomar, California

Project No.	601027-001
Scale	Not To Scale
Engr./Geol.	MSB/WH
Drafted By	MSB
Date	September 2005

Figure No. 2



Legend

- LFT-6 1+25' / 0+00' — Approximate Location of Fault Trench
- N50W 83S — Approximate Location of Fault (showing average strike and dip of fault)
- Recommended Stucture Setback Zone
- Proposed Project Boundary
- Limits of This Investigation

FAULT LOCATION MAP

Geologic Fault Investigation

Assessor Parcel Numbers 362-250-003 & 362-250-004, Wildomar, California

Project No.	601027-002
Scale	1" = ~100ft.
Engr./Geol.	MSB
Drafted By	PC/MSB
Date	September 2005

Figure 3

LEGEND

QUATERNARY

Holocene

- Qal — Alluvium, colluvium, and slope wash
- Qoal — Older alluvium
- Qtr — Stream-terrace deposits
- Qt — Terrace deposits
- Qls — Landslide deposits
- Qds — Dripping Springs Formation
- Qps / Qpf — Pauba Formation
  Qps, sandstone part; Qpf, fanglomerate part.
- Qus / Quc — Unnamed sandstone and conglomerate, formation
  Qus, sandstone part; Quc, conglomerate part.

Pleistocene

TERTIARY

Pliocene

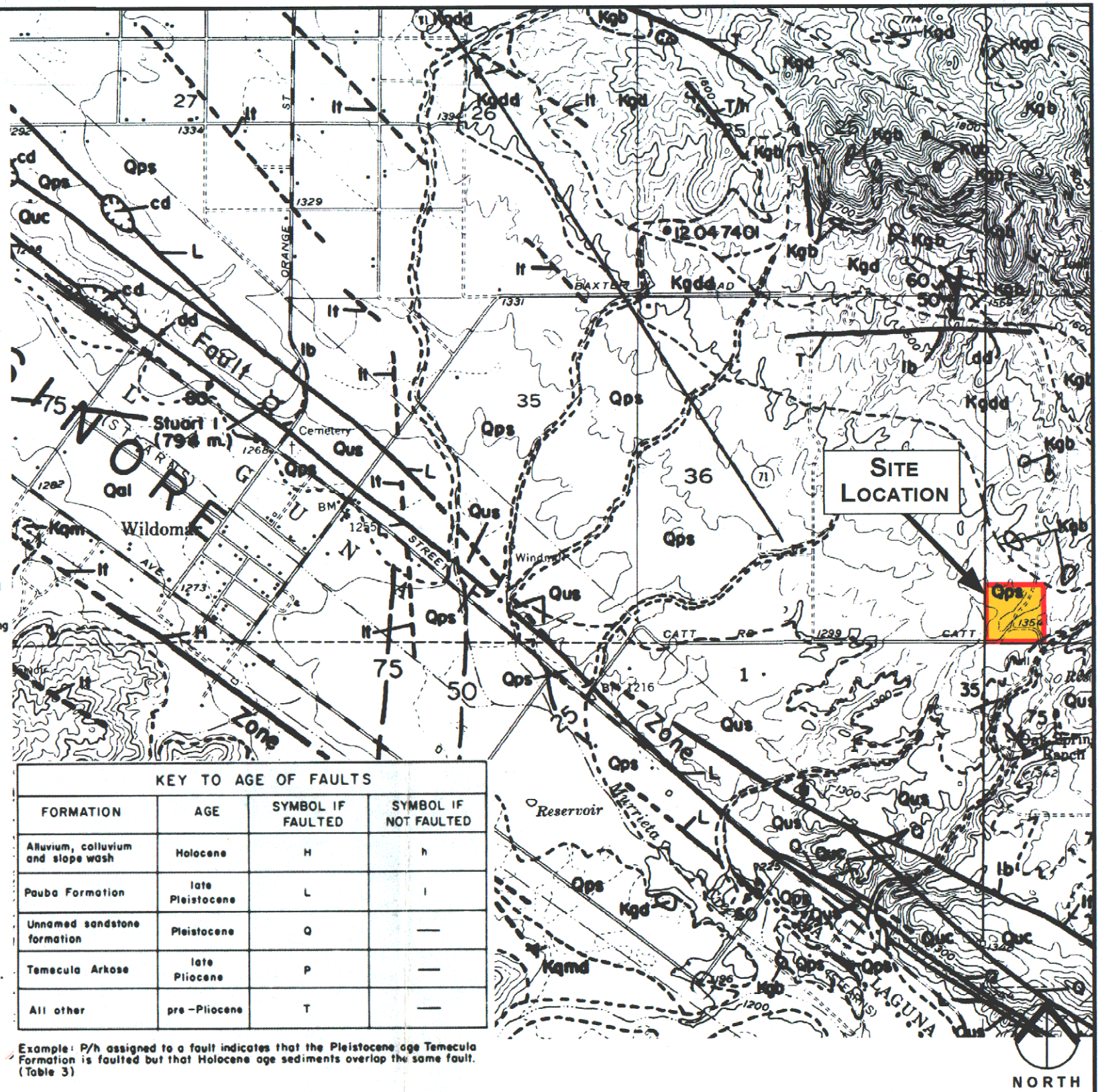
- Tta — Temecula Arkose

Miocene

- Tsr — Santa Rosa Basalt
- Tot — Older terrace deposits

MAP SYMBOLS

- FAULT — Solid line where confirmed, dashed line where inferred, dotted line where concealed by unfaulted rocks; U, upthrown side; D, downdropped side; single arrow and corresponding number indicate direction and amount of dip of fault plane; double arrows indicate the relative direction of horizontal movement; ~~~ indicates shear zone; X, indicates fault based on gravity data.
- Geologic contact
- Syncline
- Anticline
- Dike in metamorphic rock complex
- Tuffaceous horizon
- Conglomerate horizon in sandstone formation
- 15 — Dip and strike of bedding
- 50 — Dip and strike of overturned bedding
- 15 — Approximate dip and strike of bedding
- 40 — Strike and dip of layering in volcanic rocks
- 75 — Strike and dip of S-surface in metamorphic rocks
- 50 — Dip and strike of joint
- Strike of vertical joint
- 05 20 75 01 — Rock sample locality
- 05 15 75 01 (KA 9) — Rock sample locality of material dated by K/Ar analysis.
- Berghofer No. 1 (1234 m) — Exploratory oil well showing total depth drilled below land surface and name.
- 8S 2W 17 MI — Water well showing State number.
- cd — Closed depression
- Qls (5d) — Landslide deposit and corresponding number.
- 75 — Contours of the ground water table as measured in the autumn of 1971. (Contour interval in 25 m).
- Fault controlled ground water barrier.



KEY TO AGE OF FAULTS

FORMATION	AGE	SYMBOL IF FAULTED	SYMBOL IF NOT FAULTED
Alluvium, colluvium and slope wash	Holocene	H	h
Pauba Formation	late Pleistocene	L	l
Unnamed sandstone formation	Pleistocene	Q	—
Temecula Arkose	late Pliocene	P	—
All other	pre-Pliocene	T	—

Example: P/h assigned to a fault indicates that the Pleistocene age Temecula Formation is faulted but that Holocene age sediments overlap the same fault. (Table 3)

Base Map: Modified from Kennedy, 1977

Local Geologic Map

Geologic Fault Investigation

Assessor Parcel Numbers 362-250-003 & 362-250-004, Wildomar, California

Project No.	601027-002
Scale	1" = 2000'
Geol.	MSB
Drafted By	AVI
Date	September 2005

Figure No. 4

Appendix A

APPENDIX A

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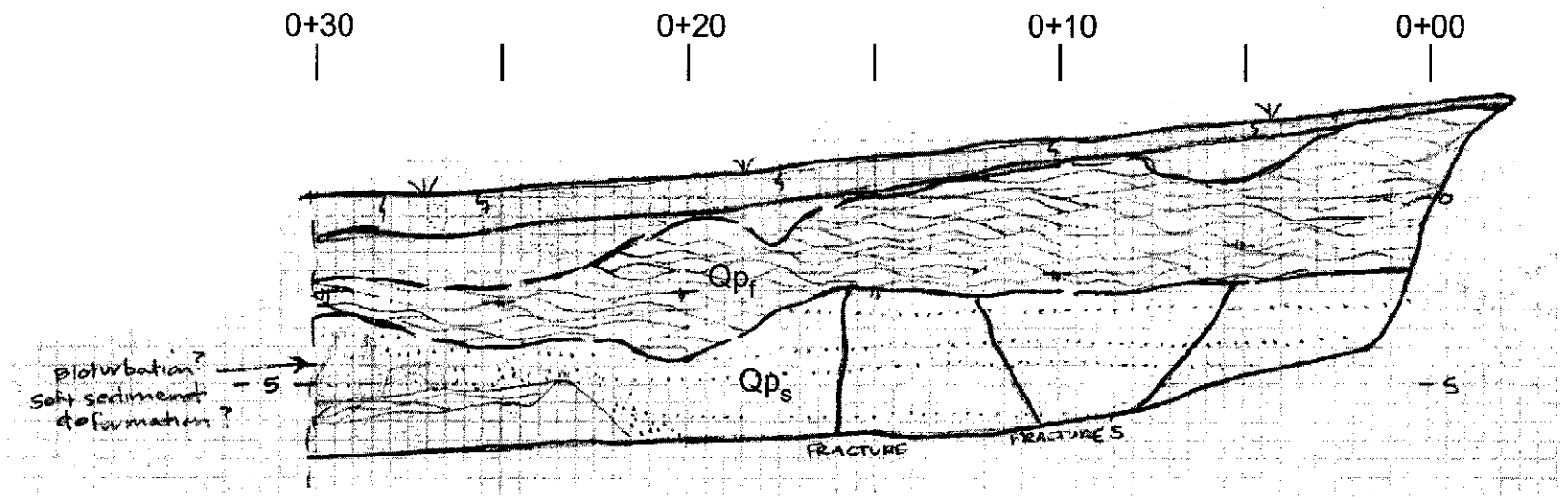
*Effective January 1, 2002 this department, has been renamed the California Geological Survey

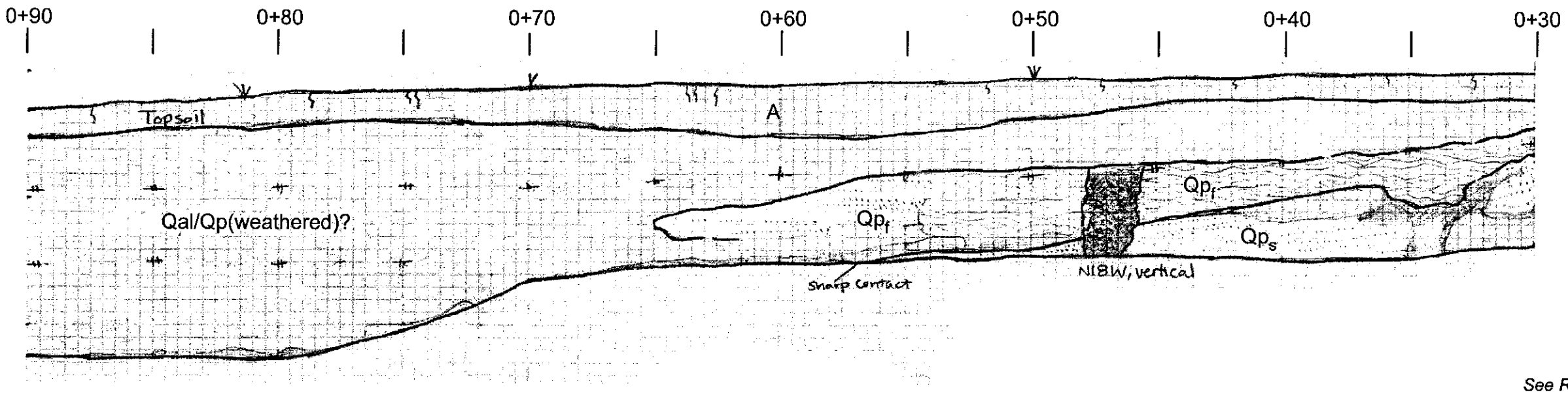
Aerial Photographs Used

Flight Date	Photograph No.	Scale (inch to feet)
9-11-97	C116-41-249-251	1"=2000'
5-14-93	C19-7-4-5	1"=2000'
2-20-91	91033-13-14	1"=4000'
1-13-89	CAA-89019-13-14	1"=4000'
2-8-88	88045-11	1"=2000'
5-8-86	86119-8	1"=2000'
5-15-67	AXM-3HH-76	1"=2000'
5-8-49	AXM-6F-11-12	1"=2000'

Appendix B



N15°E
West Wall



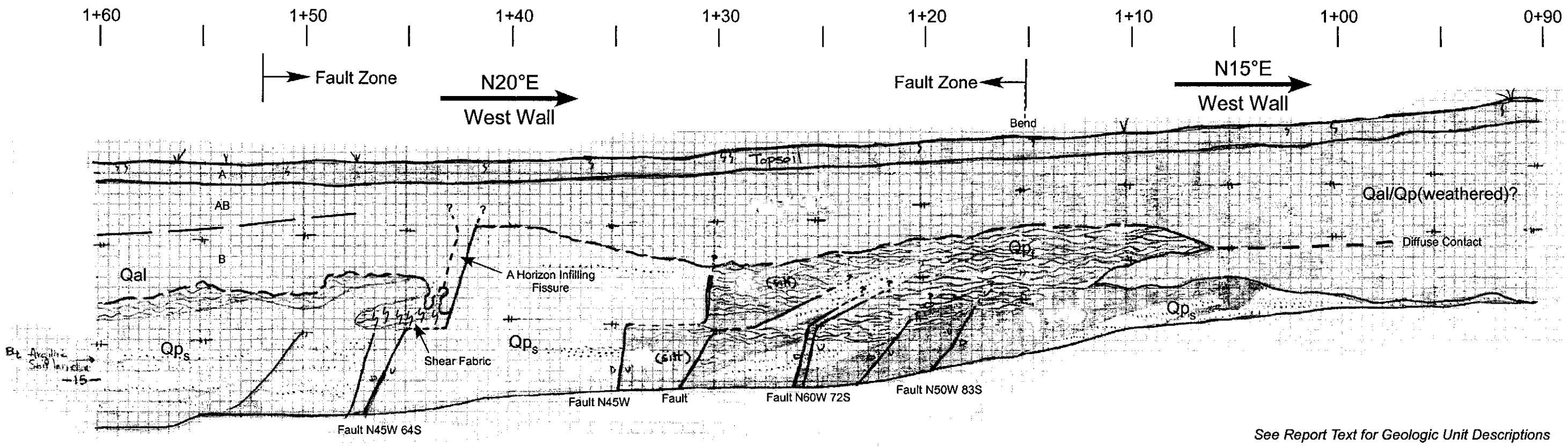
See Report Text for Geologic Unit Descriptions

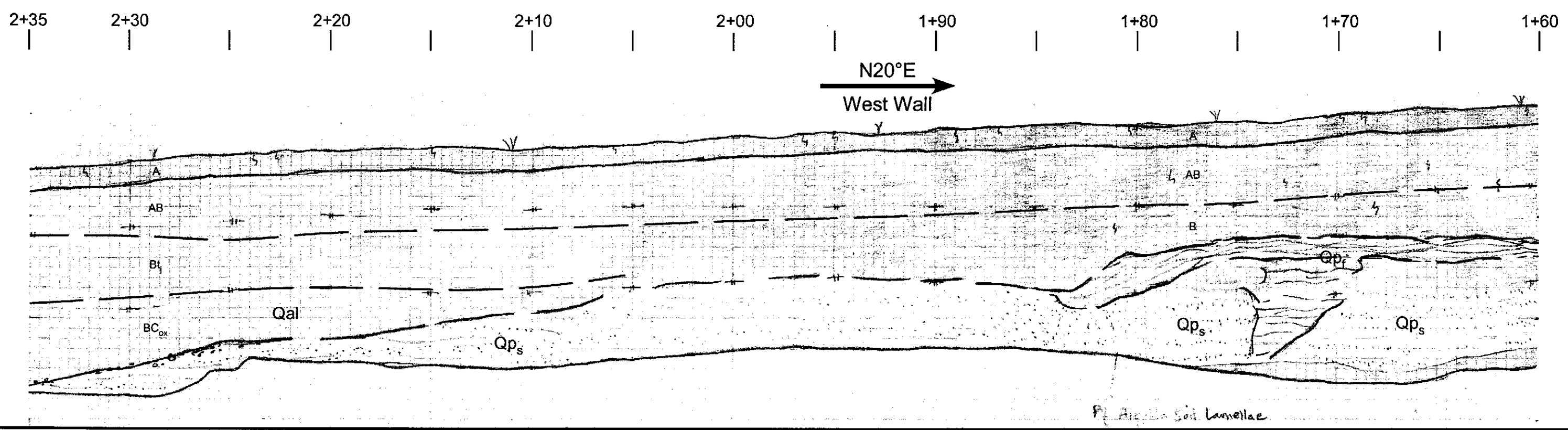
FAULT TRENCH LOG LFT-1

Assessor Parcel Numbers 362-250-003 & 362-250-004

Wildomar, California

Project No.	601027-002	Logged By	PC
Scale	1"=5' H=V	Drafted By	PC
Engr/Geol.	AXT/MSB	Date	Sept 2005





FAULT TRENCH LOG LFT-1
Geologic Fault Investigation
Assessor Parcel Numbers 362-250-003 & 362-250-004, Wildomar, California

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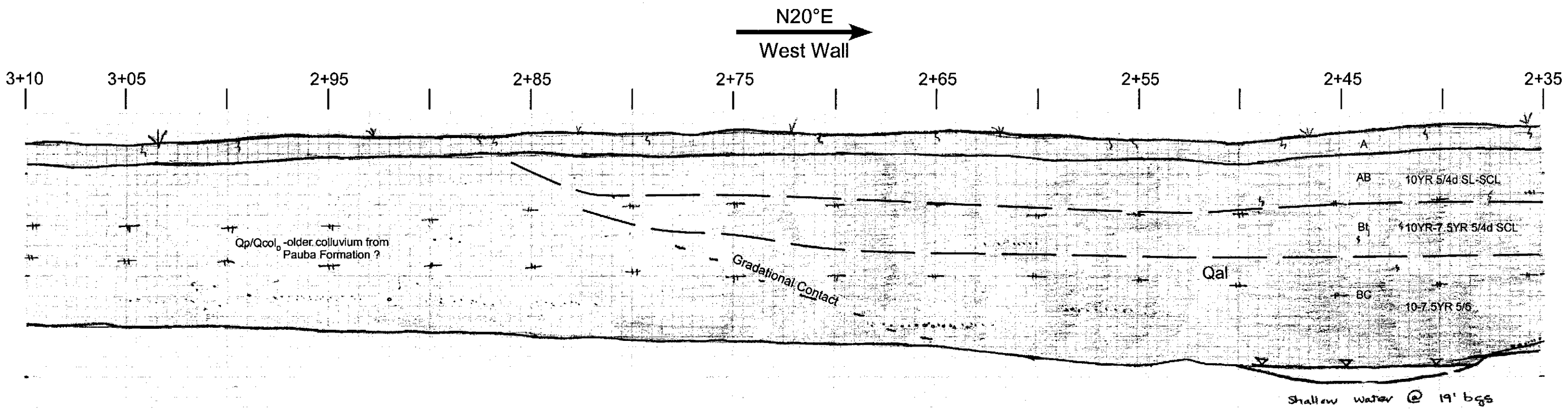
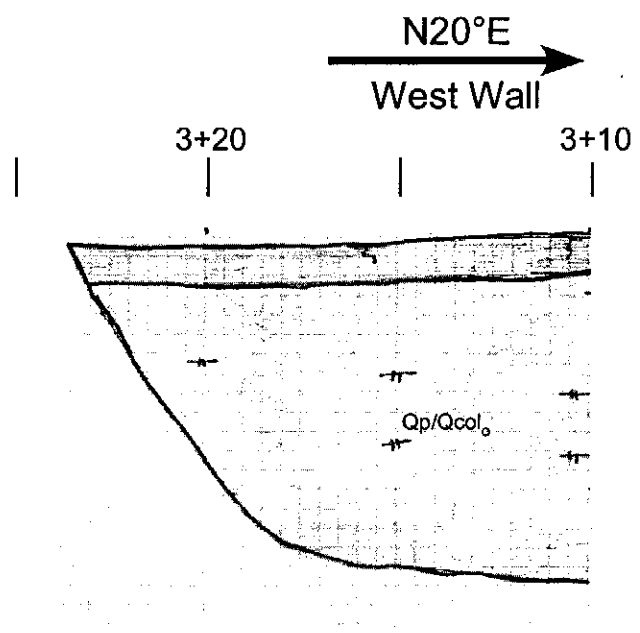
Scale	1"=5' H=V	Drafted By	PC
Engr/Geol.	AXT/MSB	Date	Sept 2005





See Report Text for Geologic Unit Descriptions

FAULT TRENCH LOG LFT-1
Geologic Fault Investigation
Assessor Parcel Numbers 362-250-003 & 362-250-004, Wildomar, California

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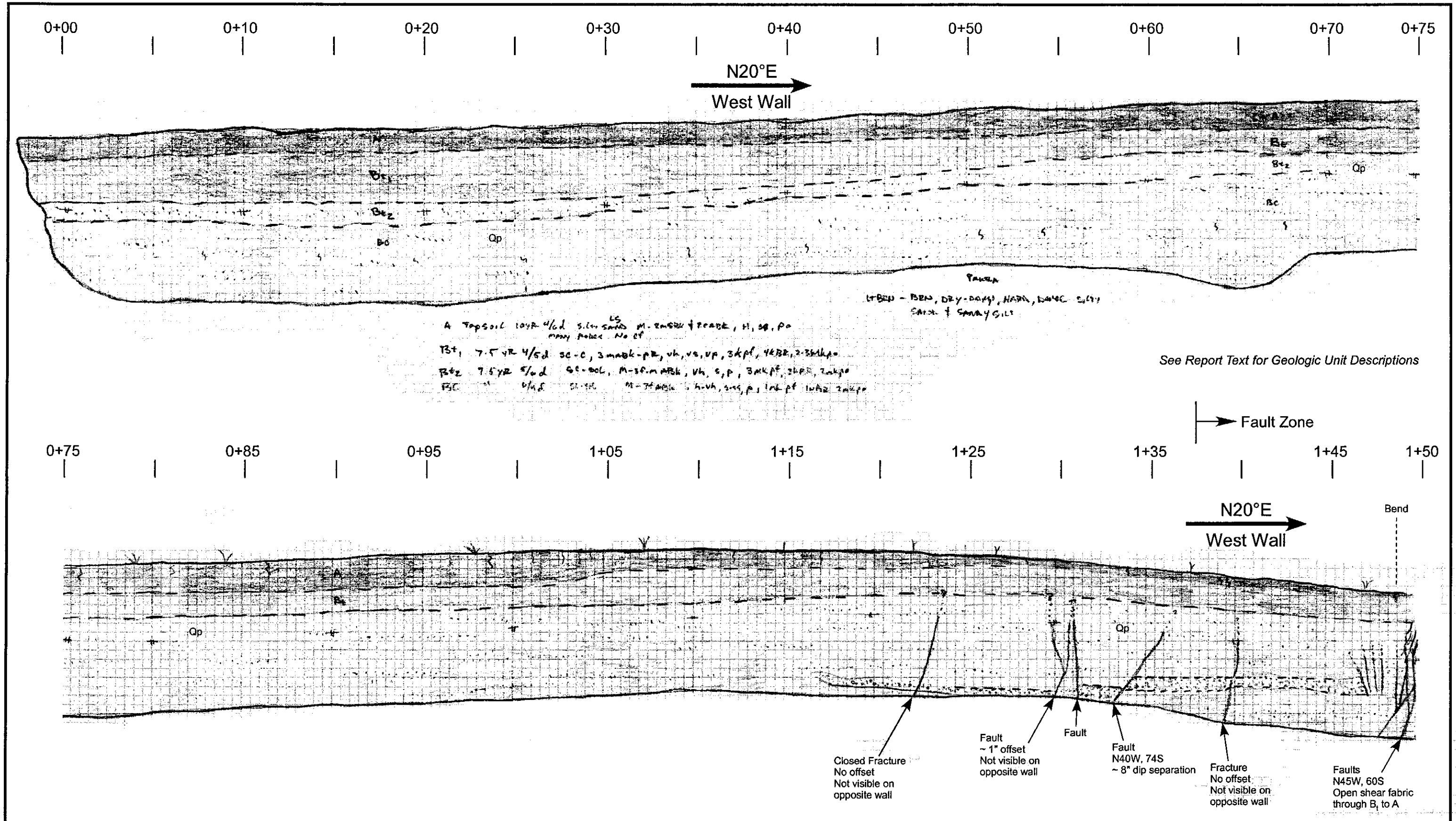
Scale	1"=5' H=V	Drafted By	PC
Engr/Geol.	AXT/MSB	Date	Sept 2005



See Report Text for Geologic Unit Descriptions

FAULT TRENCH LOG LFT-2

Geologic Fault Investigation

Assessor Parcel Numbers 362-250-003 & 362-250-004, Wildomar, California

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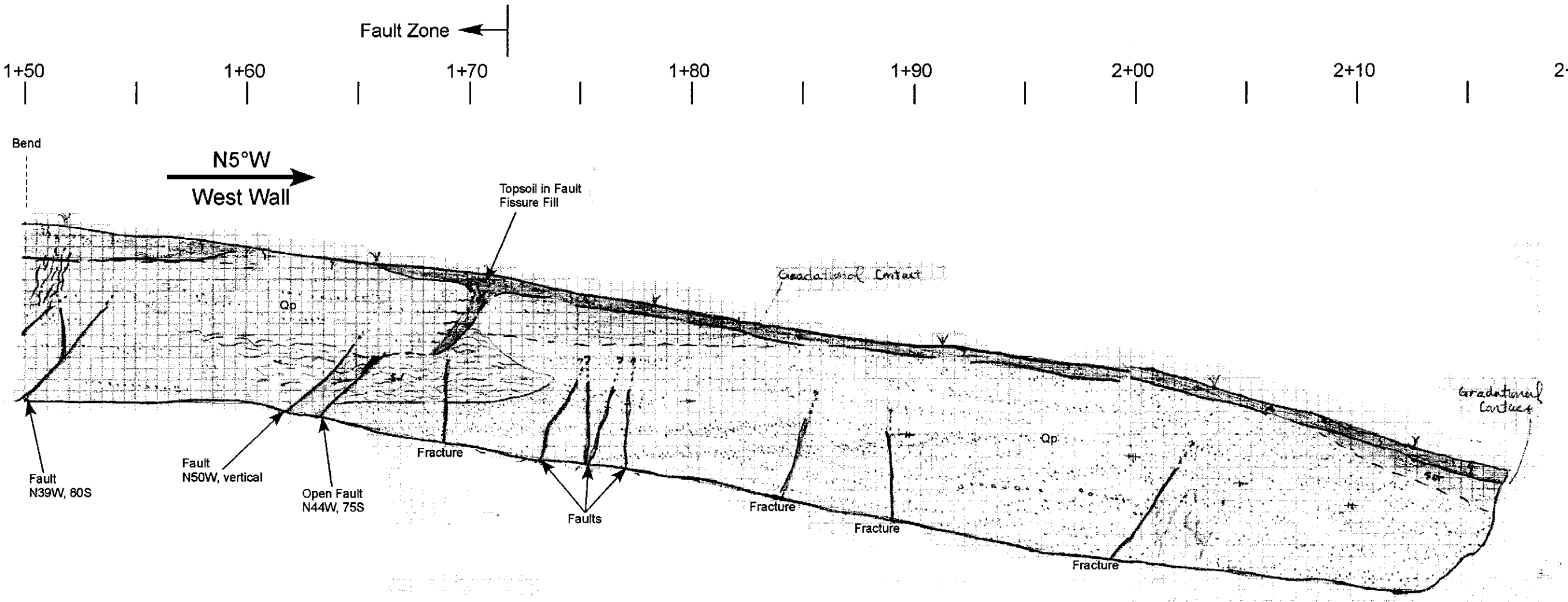
Engr/Geol.	AXT/MSB	Date	Sept 2005



See Report Text for Geologic Unit Descriptions

FAULT TRENCH LOG LFT-2
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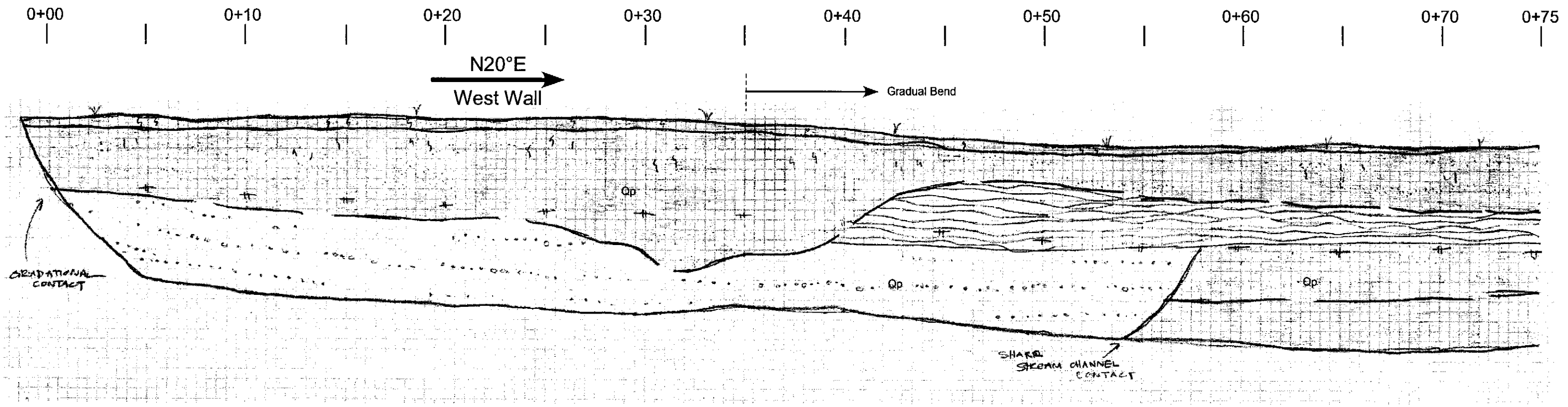
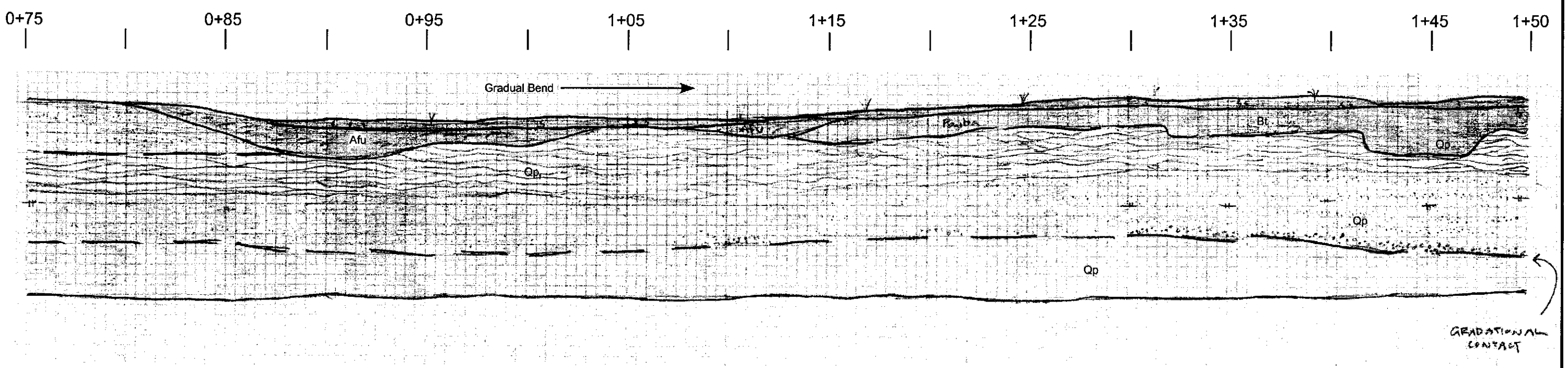


See Report Text for Geologic Unit Descriptions



FAULT TRENCH LOG LFT-3
Geologic Fault Investigation
Assessor Parcel Numbers 362-250-003 & 362-250-004, Wildomar, California

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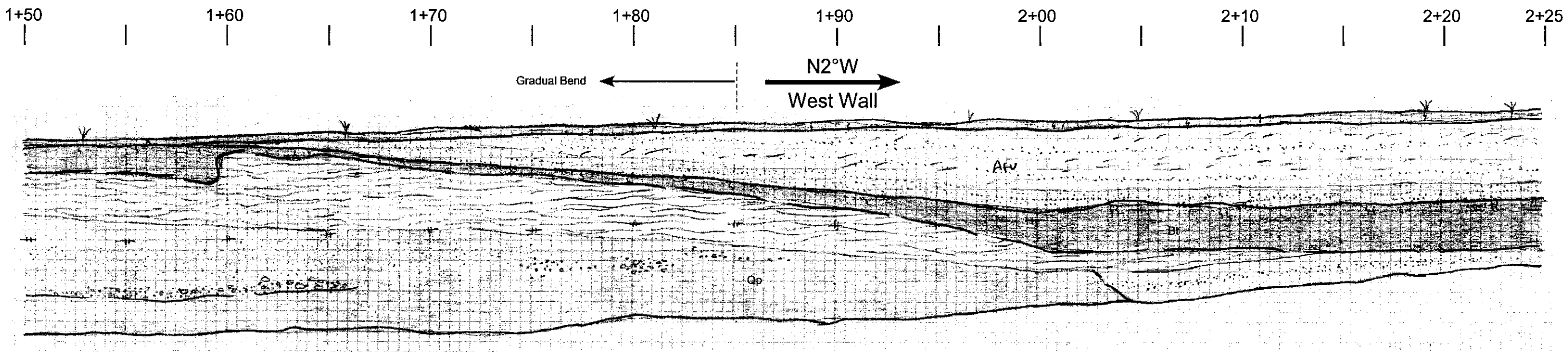
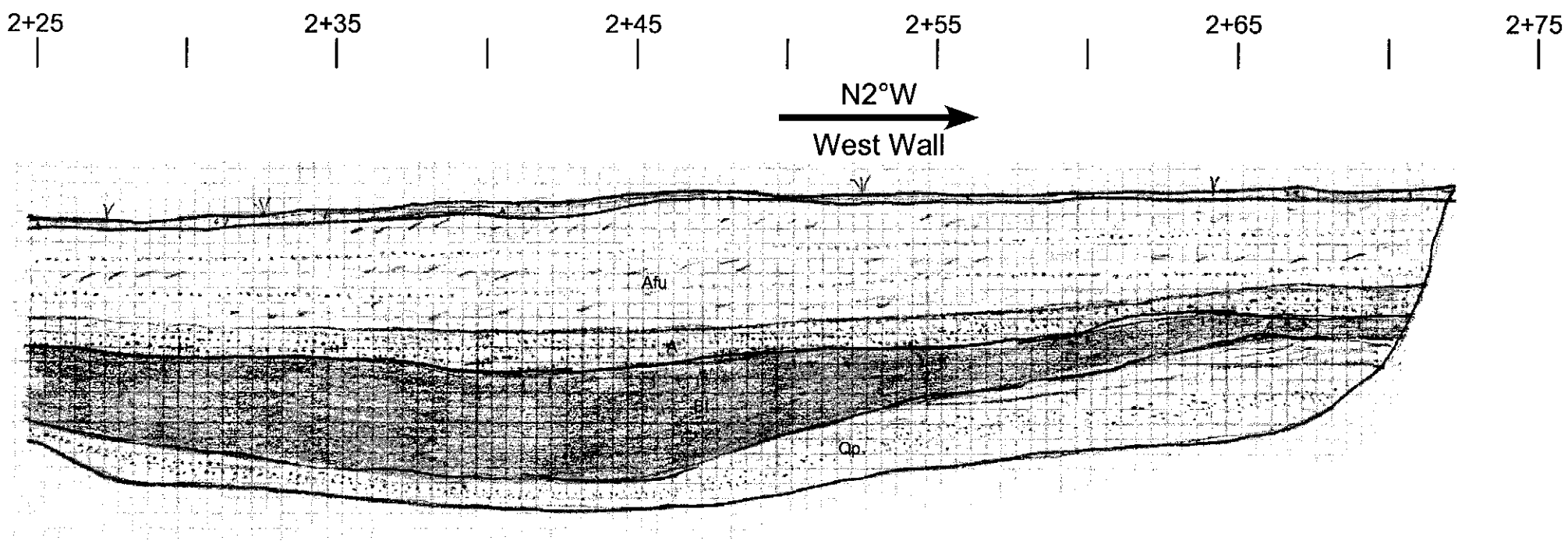
Engr/Geol.	AXT/MSB	Date	Sept 2005





See Report Text for Geologic Unit Descriptions

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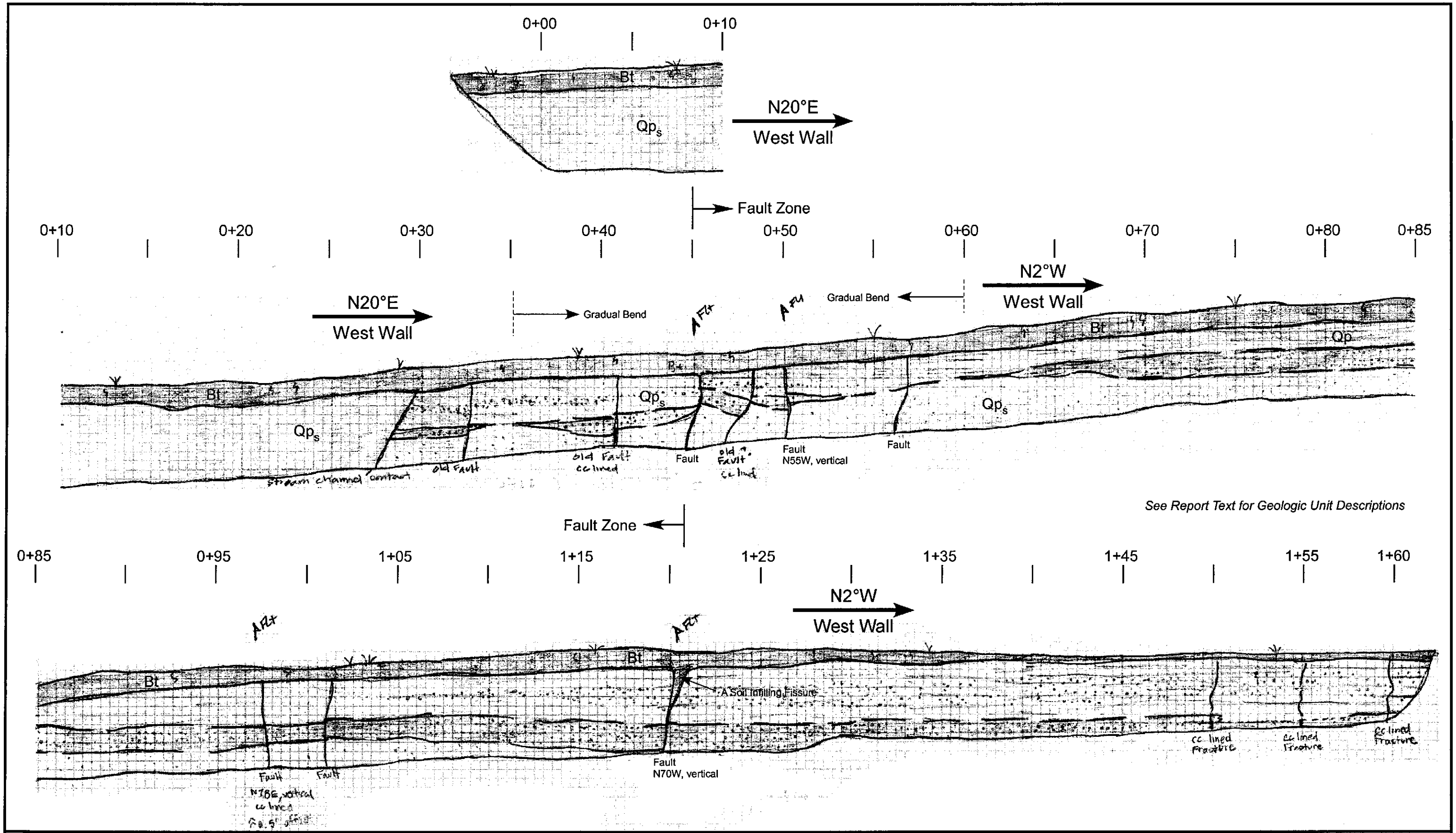

See Report Text for Geologic Unit Descriptions

FAULT TRENCH LOG LFT-4
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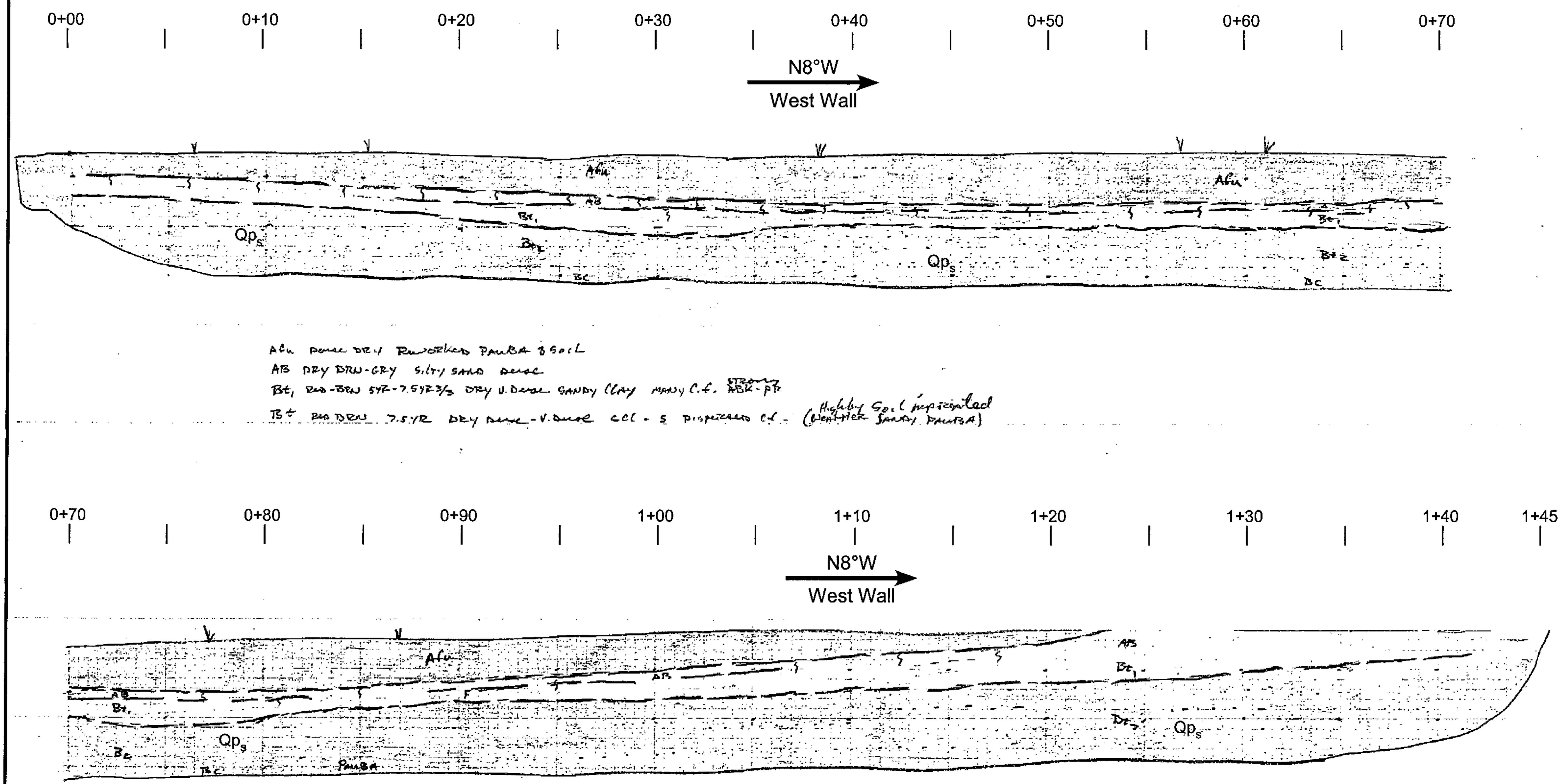
Engr/Geol.	AXT/MSB	Date	Sept 2005



See Report Text for Geologic Unit Descriptions

FAULT TRENCH LOG LFT-5

Geologic Fault Investigation

Assessor Parcel Numbers 362-250-003 & 362-250-004, Wildomar, California

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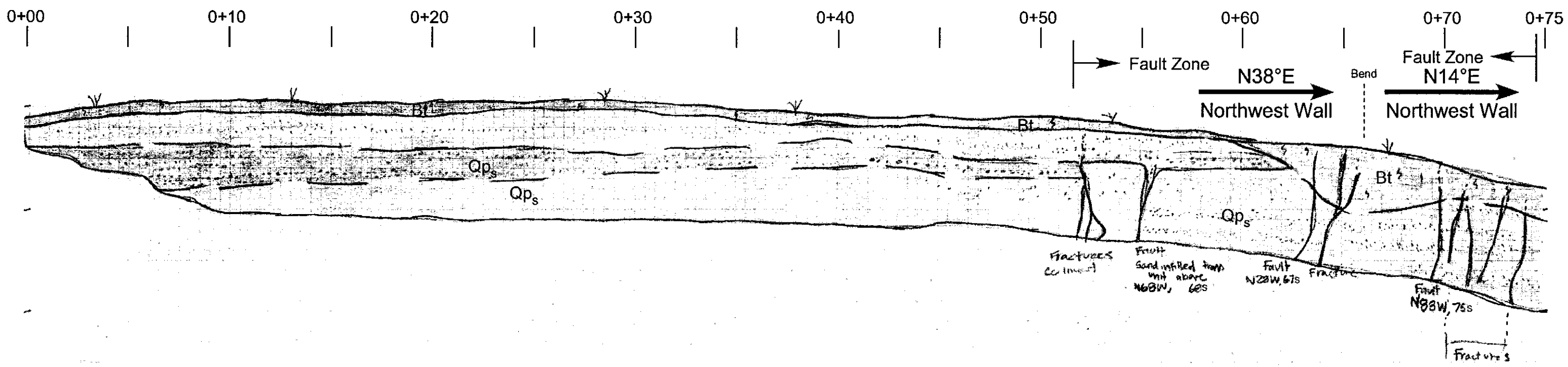
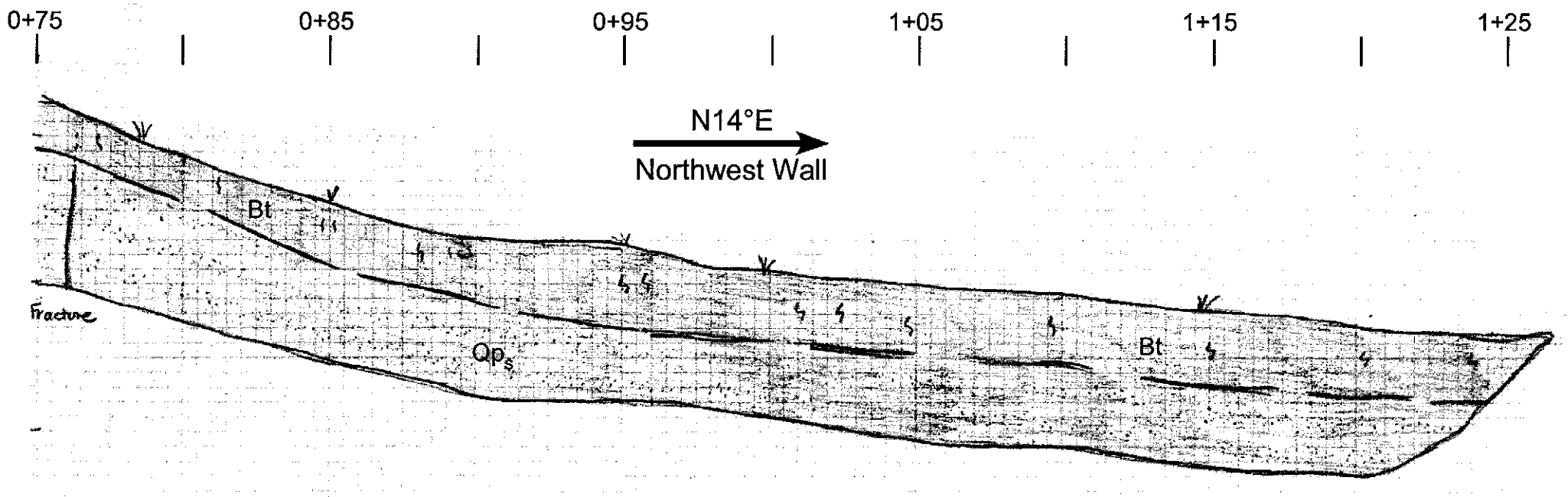
Engr/Geol.	AXT/MSB	Date	Sept 2005





See Report Text for Geologic Unit Descriptions

FAULT TRENCH LOG LFT-6

Geologic Fault Investigation

Assessor Parcel Numbers 362-250-003 & 362-250-004, Wildomar, California

Project No.	601027-002	Logged By	PC
Scale	1"=5' H=V	Drafted By	PC
Engr/Geol.	AXT/MSB	Date	Sept 2005

Appendix C

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

August 16, 2005

Project No. 601027-001

To: Mr. Arvid Trivedi
c/o Mr. Reza Kassaraian
MRK Commercial
23821 Hillhurst Drive, Suite 29
Laguna Niguel, California 92677

Attention: Mr. Arvid Trivedi

Subject: Authorization to Perform Subsurface Geologic Fault Investigation, ±5-Acre Parcel APN 362-250-004 (also listed as changed to 362-250-027), Wildomar, County of Riverside, California

Introduction

In response to a request and authorization from Mr. Reza Zolfaghari, Leighton Consulting, Inc. (LCI) has proposed to perform a subsurface geologic fault investigation for the ~5-acre subject site (APN 362-250-004) which is located northwest of the intersection of Clinton Keith Road and Iodine Springs Road, in the Wildomar area of unincorporated Riverside County, California.

The purpose of our proposed investigation will be to: 1) identify the presence or absence of active or potentially active fault-lines within the parcel boundaries and, 2) locate and evaluate the limits of faulting and ground rupture potential within the project site if present. The preliminary conclusions and recommendations will be provided to the above referenced client and submitted to the Riverside County Geologist for review and comment.

Tasks involved in this geotechnical investigation include, but may not be limited to:

- Fault Trenching – Approximately 600 lineal feet (total) of fault trench will be excavated to an approximate depth of 5-10 feet below ground surface to identify the location(s) of suspect fault splays within the site. Trenching will be performed by Tracked Excavator or Backhoe.
- Coordination with Underground Services Alert to identify known existing (public) underground utilities.
- The fault trenches will be examined by a Certified Engineering Geologist and logged by a geologist from our firm. Fault locations (if encountered) will be field staked for surveying purposes.

41715 Enterprise Circle N., Suite 103 ▪ Temecula, CA 92590-5661
909.296.0530 ▪ Fax 909.296.0534 ▪ www.leightongeo.com

- Trenches within Parcel 362-250-004 will be backfilled and densified at the completion of our study.
- Preparation of an illustrated report summarizing current site conditions, approximate fault locations and preliminary building setback zones (as necessary).

Upon your authorization to proceed, this investigation will commence with approximately two weeks of field investigation (trenching), followed by a verbal conformation of our findings to our client and report preparation. Upon completion of the field investigation a fault rupture hazard report with the location of any active and/or potentially active faults will be submitted to the Riverside County Geologist for review and comment. We believe the current turnaround time for the counties review of the investigation report to be approximately 4-6 weeks.

Authorization

We would appreciate your authorization to proceed with the subsurface geologic fault investigation for the ±5-Acre Parcel APN 362-250-004 (also listed as changed to 362-250-027), by signing below and faxing a copy to our office. If you have any questions regarding this letter, please do not hesitate to contact this office.

Respectfully Submitted,

LEIGHTON CONSULTING, INC.

Robert F. Riha, Principal Geologist

Land Owner Approval:

By: Arvind Trivedi
Signature

ARVIND TRIVEDI, owner - Aug-17-05
Printed Name/Title Date

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

TRANSMITTAL

To: Mr. Reza Zolfaghari
C/o MRK Commercial
23821 Hillhurst Drive, Suite 29
Laguna Niguel, California 92677

Date: September 19, 2005

Project No. 601027-002

Attention: Mr. Reza Zolfaghari

Transmitted:	The Following:	For:
___Herewith	___Draft Report	___Your Use
X Via Courier	X Final Report	X As Requested
___Client Pick Up	___Extra Report	
___Fed Ex	___Proposal	
	___Other	

Subject: Geological Fault Hazard Investigation, Proposed ±5-Acre Parcel, APN 362-250-003, Wildomar, Riverside County, California

LEIGHTON CONSULTING, INC.

By: Mitch Bornyasz

Distribution: (2) Addressee
(2) Riverside County Planning Department; Attention: Mr. David Jones

41715 Enterprise Circle N., Suite 103 ■ Temecula, CA 92590-5661
909.296.0530 ■ Fax 909.296.0534 ■ www.leightongeo.com