



# Converse Consultants

Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

September 20, 2017

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Subject: **RESPONSE TO TERRESTRIAL SOLUTIONS INC. (TSI) DRAFT ENVIRONMENTAL IMPACT REPORT REVIEW COMMENTS - LANDSLIDE TOE TEST PIT TRENCH STUDY Mt. San Antonio College West Parcel Solar Project**  
1100 North Grand Avenue  
Walnut, California 91789  
Converse Project No. 13-31-339-30

References: Converse Consultants, Geotechnical Study Report, Proposed Fill Placement at the West Parcel, Mount San Antonio College, Walnut, California, dated December 19, 2014, Converse Project No. 13-31-339-01.

Converse Consultants, West Parcel-Landslide Toe Test Pit Trench Study, Mt. San Antonio College West Parcel Solar Project, 1100 North Grand Avenue, Walnut, California, dated July 27, 2017, Converse Project No. 13-31-339-01.

Terrestrial Solutions Inc., Geotechnical Review of Converse Report Concerning the West Parcel Landslide, Mt. San Antonio College West Parcel Solar Project, Walnut, California, dated August 31, 2017, TSI Project No. 17-088.

Terrestrial Solutions Inc., Response to EIR Planning Session Comments, West Parcel Area, Mt. San Antonio College West Parcel Solar Project, Walnut, California, dated August 31, 2017, TSI Project No. 17-088.

Dear Ms. Mitchell,

## INTRODUCTION

Converse Consultants (Converse) presents this response to review comments received from the United Walnut Taxpayers (UWT) and their consultant's, Terrestrial Solutions Inc. (TSI), Draft Environmental Impact Report (DEIR) review comments concerning the findings of four (4) exploratory test pit trenches excavated along the toe of an existing

road cut landslide that occurred during previous grading work to widen Grand Avenue in the late 1970's. The road cut landslide is located on a natural hillside slope on the central portion of the West Parcel site along Grand Avenue. The road cut landslide has continued to enlarge and creep downslope to Grand Avenue during the past 38 years. The unstable landslide deposits threaten Grand Avenue with slope instability and sudden ground movement. The unstable landslide deposits will be completely removed during grading and replaced with engineered compacted fills keyed and benched into the underlying undisturbed bedrock materials during grading for the West Parcel Solar Project.

The purpose of the four (4) exploratory test pit trenches was to determine the depth and extent of landslide deposits along the toe of the landslide along Grand Avenue and to evaluate the sedimentary bedrock structure and material properties. The four (4) exploratory test pit trenches were excavated with a Kobelco SK210-9 track-mounted excavator on June 9 and June 12, 2017. The field exploration work to further evaluate the road cut landslide and project site was stopped on June 12, 2017 due to reported concerns for the California Gnatcatcher habitat areas and breeding season. The West Parcel site field investigation work was stopped and was not completed pending further environmental evaluation of the Gnatcatcher habitat areas.

The approximate location of the four (4) exploratory test pit trenches were presented in Converse's July 27, 2017 West Parcel - Landslide Toe Test Pit Trench Study and are shown on Drawing No. 1, *Road Cut Landslide Evaluation*. The four (4) test pit trench logs are presented on Drawing Nos. 1a through 1d, *Road Cut Landslide Toe - Test Pit No. 1, No. 2, No. 3, and No. 4*. This preliminary report provided information and data for the Draft Environmental Impact Report (DEIR). Additional geotechnical studies, recommendations and reports are planned for the landslide repair and restoration including slope stability analysis, temporary cut slopes, keyway designs, subdrain system designs, geosynthetic reinforcements, buttress fills, slope stabilization fills, remedial removals and site grading.

## **BACKGROUND**

The road cut landslide occurred in the late 1970's as a result of previous grading activity by others to widen Grand Avenue. Evidence of the landslide on the road cut slope above Grand Avenue was visible in historic aerial photographs starting in 1979. No drainage control devices (brow ditches, terrace drains, down drains, catch basins, etc.) were observed or constructed on the hillside cut slope at the time it was graded to collect and control surface runoff on the slope face. The landslide was likely triggered by three (3) years of above normal rainfall between 1977 and 1980. Dozer cuts were made at the top of the hillside which directed surface runoff directly into the head scarp of the landslide.

A public records information request was made to the City of Walnut, Office of the City Clerk, on June 21, 2017 for records and information pertaining to the road cut landslide along Grand Avenue and no information responsive to the request was reported to be in the City Clerk's possession.

The road cut landslide was not repaired or restored once it occurred. The unrepaired landslide has gradually grown over the past 38 years since it occurred. The landslide growth over the years has caused significant damage to the West Parcel property. The southern toe of the landslide has moved eastward to the western edge of the Grand Avenue sidewalk. The landslide deposits are vulnerable to further sliding, ground movement and downslope creep. The landslide presents a continued hazard of slope instability and has a potential for sudden ground movement following wet weather periods along Grand Avenue and needs to be repaired.

## **RESPONSE TO REVIEW COMMENTS**

**TSI Comment: “No slip plane attitudes are presented on the test pit logs.”**

**Converse Response:** The four exploratory test pits were located along the toe of the landslide. No well-developed “slip plane” was expected at the toe of the landslide where the downslope movement and force of the landslide was stopped by the resistance of the intact slope materials resulting in a crumple zone of disturbed slope materials. The contact between the overlying disturbed landslide deposits and the underlying undisturbed bedrock materials was clearly visible in the test pits and is shown on the test pit logs. The test pits revealed that a clear and distinct “slip plane” was not encountered along the toe of the landslide. The geologic exposures in the test pits were quite consistent and characteristic of a crumple zone that commonly occurs at the toes of landslides.

Larger diameter borings and down hole logging were planned for the landslide study; however, the work was stopped over concerns for the Gnatcatcher habitat and breeding season.

**TSI Comment: “Converse states that the bedrock bedding attitudes found in the four test pits are “similar to the previously measured bedding attitudes measured for the site”**

**Converse Response:** The undisturbed bedrock bedding attitudes measured in the four test pits are similar to those encountered in Boring BH-13. The undisturbed bedding attitudes are dipping to the northwest and north. The undisturbed bedrock bedding attitudes were not measured to be dipping to the east. It would be unrealistic to expect the undisturbed bedrock bedding attitudes to be exactly the same at different bedrock exposure locations across the site.

**TSI Comment: “TSI conducted brief mapping of the area above the landslide where Converse mapped bedding that strikes north 15 to 25 degrees east (similar to the previous report).”**

**Converse Response:** The bedding attitudes measured at the top of the landslide were dipping northwest and north and are similar to the bedding attitudes and structure measured in Boring BH-13 that was down hole logged. Some variations in the bedrock bedding attitudes due to folding and deformation in the sedimentary bedrock units will occur across the project site. Grading for the West Parcel Solar project will remove and lower the hilltop and landslide down approximately 54 feet to Elevation 761 feet. The remaining landslide deposits will be completely removed during grading. The remaining bedrock bedding attitudes with out-of-slope and downslope components of dip exposed in the temporary back cut slopes of the landslide repair will be buttressed with engineered compacted fills keyed and benched into the underlying undisturbed bedrock materials.

**TSI Comment:** “The Converse report does not indicate that the out-of-slope bedding is a contributing factor to the landsliding that occurred, yet it is a likely a significant contributing factor”.

**Converse Response:** Larger diameter borings with down hole logging were planned for the central portion of the road cut landslide, however, the work was stopped over concerns for the Gnatcatcher habitat and breeding season. The road cut landslide has moved downslope in an easterly direction toward Grand Avenue while the undisturbed bedrock bedding attitudes exposed at the near surface indicate northwest and northward bedding dips. The contribution of the apparent out-of-slope and downslope components of bedding dip cannot not be determined at this time and is speculative.

**TSI Comment:** “The hill near the landslide exposes bedrock that consists of interbedded siltstone, claystone and sandstone, yet also visible at the top of hill and to the south are conglomeratic bedrock materials”.

**Converse Response:** The sedimentary bedrock materials underlying the project site consist of interbedded sandstone, conglomerate, siltstone and claystone. Drawing No. 1, *Road Cut Landslide Evaluation*, was prepared to show the location of the four (4) test pits excavated along the toe of the landslide. Drawing No. 1 and the West Parcel-Landslide Toe Test Pit Trench Study report was focused on the toe of the road cut landslide and only presented information and data on the exploratory test pits.

No evidence of ground movement or displacement has been observed along the sidewalk and street surface on the west side of Grand Avenue below the road cut landslide. No grading work is proposed on Grand Avenue. No subsurface field exploration was performed on Grand Avenue.

**TSI Comment:** “Test Pit No. 4 (Drawing 1d) indicates the presence of landslide debris in the upper portion of the test pit and along the back wall of the excavation”.

**Converse Response:** Terrestrial Solutions, Inc. (TSI) has misinterpreted the information presented on Drawing No. 1, *Road Cut Landslide Evaluation*, and Drawing No. 1d, *Road Cut Landslide Toe – Test Pit No. 4*. The landslide debris (QIs) shown in Test Pit No. 4

has been disturbed by landslide movement. Review of Drawing No. 1, *Road Cut Landslide Evaluation*, shows clear evidence of a disturbed and mounded ground surface that has produced a topographic anomaly and break along the toe of the landslide at the Test Pit No. 4 location. No well-developed slip plane was observed in Test Pit No. 4; however, the observed geologic exposures were characteristic of a creep affected crumple zone that commonly occurs along the toes of landslides. The (QIs) landslide materials were loose and disturbed and provided a dull thud when struck with a hammer when compared to the underlying undisturbed bedrock. The undisturbed bedrock units were striking north 75 to 88 degrees west and dipping 17 to 20 degrees north. The rear wall of the Test Pit No. 4 trench excavation did have an out-of-slope component of bedding dip with respect to the rear trench wall and its orientation.

**TSI Comment: “The logs for test pits No. 1 through 3 indicate that bedrock was encountered in the bottom of each excavation. TSI is concerned that there may be additional slip planes below the depth of excavation.”**

**Converse Response:** The four (4) exploratory test pits were excavated with a large Kobelco SK210-9 track-mounted excavator. The bedrock exposed in the bottom of Test Pit Nos. 1 through 3 encountered hard intact bedrock materials. The Kobelco SK210-9 excavator encountered significant resistance to excavation in the undisturbed bedrock at the bottom of the three trench excavations. The excavator had to scrape and chip the bedrock at the bottom of the trench during excavation. The trench sidewalls and bottoms were then cleaned off by hand to obtain bedding attitudes. The bedrock exposed in the bottom of the trenches was hard and intact when struck by a geologic hammer. There was no evidence observed in the bottom of the trenches to indicate that additional slip planes existed below the depth of the trench excavations.

No evidence of ground movement or displacement has been observed to date along the sidewalk and street surface on the west side of Grand Avenue below the road cut landslide.

**TSI Comment: “The sequence of how the landslide(s) occurred as described by Converse is not consistent with the information provided by the former Mayor of the City of Walnut (TSI, 2017)” (Ms. June Wentworth).**

**Converse Response:** The sequence of landslide failures on the road cut made to widen Grand Avenue in the late 1970’s is approximate based on available information. No records and information on the road cut landslide failures was made available from the City of Walnut, Office of the City Clerk, during our review. The date of the first road cut landslide is unknown. The approximate date of the second landslide that was left unrepaired for the past 38 years was observed on historical aerial photographs starting as early as May 11, 1979.

**TSI Comment: “Converse’s statements that the landslide continues to enlarge and represents a continued hazard to Grand Avenue, is not supported by specific evidence or slope stability analysis in their report.”**

**Converse Response:** Converse’s statements that the landslide continues to enlarge and represents a continued hazard to Grand Avenue is based on direct field observations, mapping and experience. As shown on Drawing No. 1, *Road Cut Landslide Evaluation*, the southern toe of the landslide has moved and crept down slope to the edge of the sidewalk and fence along the west side of Grand Avenue. Utility companies have had to clear away the fallen landslide materials off the tops of their buried vaults which run along the sidewalk. The toe of the landslide is clearly bulging out of the slope surface along the base of the landslide. The landslide presents a continued hazard of slope instability to Grand Avenue and needs to be repaired.

Sincerely,

**CONVERSE CONSULTANTS**



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