

MACKENZIE & ALBRITTON LLP

155 SANSOME STREET, SUITE 800
SAN FRANCISCO, CALIFORNIA 94104

TELEPHONE 415 / 288-4000
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September 22, 2022

VIA EMAIL

Governing Board
Tahoe Regional Planning Agency
128 Market Street
Stateline, Nevada 89449

Re: Verizon Wireless Response to Appeal of Staff Letter Regarding
Revised Soil Hydrologic Approval, File No. LCAP2019-0189
Telecommunications Facility, 1360 Ski Run Boulevard, South Lake Tahoe
Governing Board Agenda Item VIII, September 28, 2022

Dear Board Members:

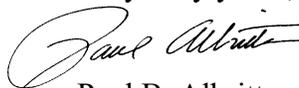
We write again regarding Verizon Wireless's monopine under construction at 1360 Ski Run Boulevard, South Lake Tahoe. Since sending you our prior appeal response letter on September 20, we have received two additional reports confirming that the deeper excavation approved by staff on August 5 complies with TRPA requirements. Code § 33.3.6(B).

A report by a licensed professional geologist with Krazan & Associates, attached as Exhibit A, confirms that during their September 14 on-site investigation, "There was no evidence of groundwater in the excavation including any evidence of current seepage or dampness in the sidewalls of the excavation."

A report by a registered professional engineer with SAC Wireless, attached as Exhibit B, confirms that the depth of the tower foundation is required pursuant to California Building Code provisions regarding minimum clearance requirements between the edge of the foundation and the slope.

These supplemental materials provide additional evidence that the deeper excavation complies with TRPA regulations and was appropriately approved by staff. We urge you to deny the appeal, and to uphold staff's August 5 approval.

Very truly yours,



Paul B. Albritton

Governing Board
Tahoe Regional Planning Agency
September 22, 2022
Page 2 of 2

cc: John Marshall, Esq.
Bridget Cornell

Schedule of Exhibits

Exhibit A: Report by Krazan & Associates, Inc, Regarding No Evidence of Groundwater
Exhibit B: Report by SAC Wireless Regarding Required Tower Foundation Depth



GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

September 20, 2022

Project No. 034-22134

Mr. Jason S. Kidd
SAC Wireless
333 University Avenue
Sacramento, California 95825
Jason.kidd@sacw.com

RE: Report of Findings
Groundwater Assessment
1360 Ski Run Boulevard
Lake Tahoe, California

Dear Mr. Kidd:

Pursuant to your request, Krazan & Associates, Inc. (Krazan) has prepared this *Report of Findings* to perform a Groundwater Assessment for a proposed cell tower site to be located on 1360 Ski Run Boulevard, Lake Tahoe, California (see Figure 1). The work was based on emails dated September 7 and 9, 2022 between the client and Krazan where Krazan provided a scope of work summary and on a September 12, 2022 telephone conversation with the client. The work was undertaken in relation to site development concerns and not at the request of a regulatory agency.

PURPOSE

Based upon the client-approved scope, the purpose of this proposal was to assess and document the presence or absence of groundwater in the proposed cell tower excavation.

SCOPE OF WORK

Krazan prepared a site-specific health and safety plan (HASP) for the use of Krazan personnel for site assessment activities.

On September 14, 2022, Krazan conducted a field inspection of the cell tower footing as follows:

- A visual observation of the footing excavation was conducted about one (1) day following completion of the excavation.
- A water level meter was used to assess if water is present and if groundwater is present, to document the depth to groundwater.
- Photographs of the excavation were taken.

Krazan conducted a “desktop study” of the local hydrology to assess if groundwater may likely be present in the area of the excavation.

REPORT OF FINDINGS

General Field Observations

The proposed cell tower excavation area footprint measured approximately 24 feet by 24 feet, as shown on Figure 2. The actual excavation was slightly larger due to the removal of bedrock which created slightly uneven walls (see Photo Log). The excavation followed the downslope of the ground surface parallel to Needle Peak Road trending northeast toward Ski Run Boulevard. The upslope, or southwest wall of the excavation, was approximately 13.5 feet in height; whereas, the downslope, or northeast wall of the excavation, ranged from approximately seven (7) to eight (8) feet in height. The southwest wall consisted of approximately five (5) feet of overburden soil underlain by one (1) to three (3) feet of decomposed granite (DG) underlain by six (6) to eight (8) feet of competent bedrock. The northeast wall was observed to consist of approximately one (1) to two (2) feet of overburden soil underlain by two (2) to five (5) feet of DG underlain by one (1) to three (3) feet of competent bedrock. The southeast and northwest walls consisted of approximately one (1) to three (3) feet of overburden soil underlain by two (2) to three (3) feet of DG underlain by two (2) to four (4) feet of competent bedrock.

Groundwater Assessment

There was no evidence of groundwater in the excavation including any evidence of current seepage or dampness in the sidewalls of the excavation. A water level meter was included in the equipment mobilized to the site, but was not used as no indication of groundwater or moisture was observed.

Desktop Hydrologic Review

Based on a review of the *Tahoe Valley South Subbasin (6-005.01) Annual Report for Water Year 2021* dated March 29, 2022, prepared by the South Tahoe Public Utilities District, and on maps provided by the client, the subject site appears to be sited just to the east of the Bijou sub-area of the Tahoe Valley South (TVS) Subbasin. Figure 2-6 (see Appendix A of this report) of the TVS Subbasin Report shows model simulated groundwater contours for the period from WY 1983 to WY 2021. According to the TVS Subbasin Report, the contours in Figure 2-6 are considered appropriate to illustrate the general pattern of groundwater flow in the TVS Subbasin. Further, the TVS Subbasin Report states on Page 26:

Comparison of contours shows that the generalized pattern of groundwater flow remains very similar between October 2020 and May 2021. This is consistent with hydrologic data (Appendix A of the TVS Subbasin Report) that shows the typical variation of ground levels is only on the order of a few feet.”

The approximate elevation of the subject site is on the order of 6375 feet above mean sea level. Based on a review of the contours shown on Figure 2-6 in the TVS Subbasin Report and on the approximate location of the subject site, the inferred elevation of the groundwater contour beneath the subject site is approximately 6235 feet above msl. Therefore, the depth to water beneath the proposed cell tower is approximately 140 feet. Since the excavation is approximately 13 feet below ground surface, the average depth to groundwater would be expected to be approximately 127 feet below the bottom of the excavation.

CONCLUSIONS

Based on the observations in the field, there was no evidence of groundwater in the excavation on the date of Krazan’s site visit. Krazan’s findings are consistent with the findings discussed in the *Draft Soil*

Hydrologic Investigation conducted by TRPA on September 1 and 14, 2022 (see Appendix A of this report).

Further, Krazan's review of the TVS Subbasin Report appears to indicate that the inferred average groundwater elevation in the area of the subject site is approximately 6235 above msl or approximately 127 feet below the bottom of the excavation.

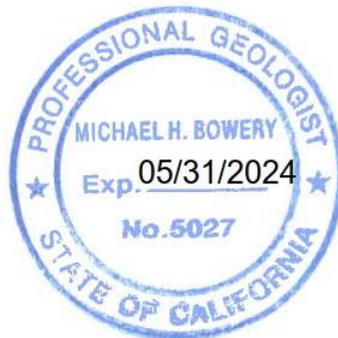
LIMITATIONS

Krazan & Associates performed its services in a manner consistent with the standards of care and skill ordinarily exercised by members of the profession practicing under similar conditions in the geographic vicinity and at the time the services were performed. Even where our services are performed in accordance with the professional standard of care it is possible that hazardous material contamination or buried structures may not be detected or disclosed through the investigation proposed herein. Therefore, no warranty or guarantee, express or implied, is part of the services offered.

This investigation was intended to be a limited observation of groundwater conditions during a specific time interval and is not intended to be a comprehensive groundwater investigation.

CLOSING

We appreciate the opportunity to be of service to SAC Wireless. If you have any questions, or if we can be of further assistance, please feel free to contact me at (559) 348-2200.



Respectfully Submitted,
KRAZAN & ASSOCIATES, INC.

A handwritten signature in blue ink that reads "Michael H. B.".

Michael H. Bowery, PG 5027
Senior Project Manager

A handwritten signature in blue ink that reads "J. R. Paul".

Jason R. Paul, PG 7557
Environmental Regional Manager

MHB/JRP/mlt

Attachments:

- Figure 1 – Vicinity Map
- Figure 2 – Site Map
- Photo Log
- Appendix A – Supplemental Information



VICINITY MAP		Date: September 2022	 SITE DEVELOPMENT ENGINEERS <i>With Offices Serving the Western United States</i>
PROPOSED CELL TOWER EXCAVATION 1360 SKI RUN BOULEVARD SOUTH LAKE TAHOE, CALIFORNIA	Drawn By: MLT	Approved by: MB	
	Project No. 034-22134	Figure No. 1	



 Excavation Boundary

N

0 12.5 25 50
US Feet



Site Map

Groundwater Assessment
1360 Ski Run Boulevard
Lake Tahoe, California

Scale:
1"=300'

Drawn By:
TW

Project No:
034-22134

Date:
September 2022

Approved By:
MB

Figure No:
2



SITE DEVELOPMENT ENGINEERS

With Offices Serving the Western United States



Photo 1: North-Northeast view of the cell tower excavation measuring 24 feet by 24 feet (see white line). Excavation slopes to north-northeast and ranges from seven (7) feet (ladder sidewall) to 13 feet (excavator sidewall) deep.



Photo 2: South-Southeast-facing view of the northeast sidewall (approximately 13 feet deep).

**PROPOSED CELL TOWER EXCAVATION
1360 SKI RUN BOULEVARD
SOUTH LAKE TAHOE, CALIFORNIA**

Project No. 034-22134
Date: September 2022
Approved by: MB

 **Krazan**
SITE DEVELOPMENT ENGINEERS
Offices Serving the Western United States



Photo 3: Southwest-facing view, closeup of southwest wall of excavation beneath excavator.

Photo 4:



Northeast-facing view of northwest wall of excavation showing overburden soil, DG and competent bedrock.

**PROPOSED CELL TOWER EXCAVATION
1360 SKI RUN BOULEVARD
SOUTH LAKE TAHOE, CALIFORNIA**

Project No. 034-22134
Date: September 2022
Approved by: MB

 **Krazan**
SITE DEVELOPMENT ENGINEERS
Offices Serving the Western United States



Photo 5: Southeast view of excavation showing measuring rod in southwest corner.



Photo 6: Closeup view of measuring rod showing overburden, decomposed granite and competent bedrock on bottom of excavation.

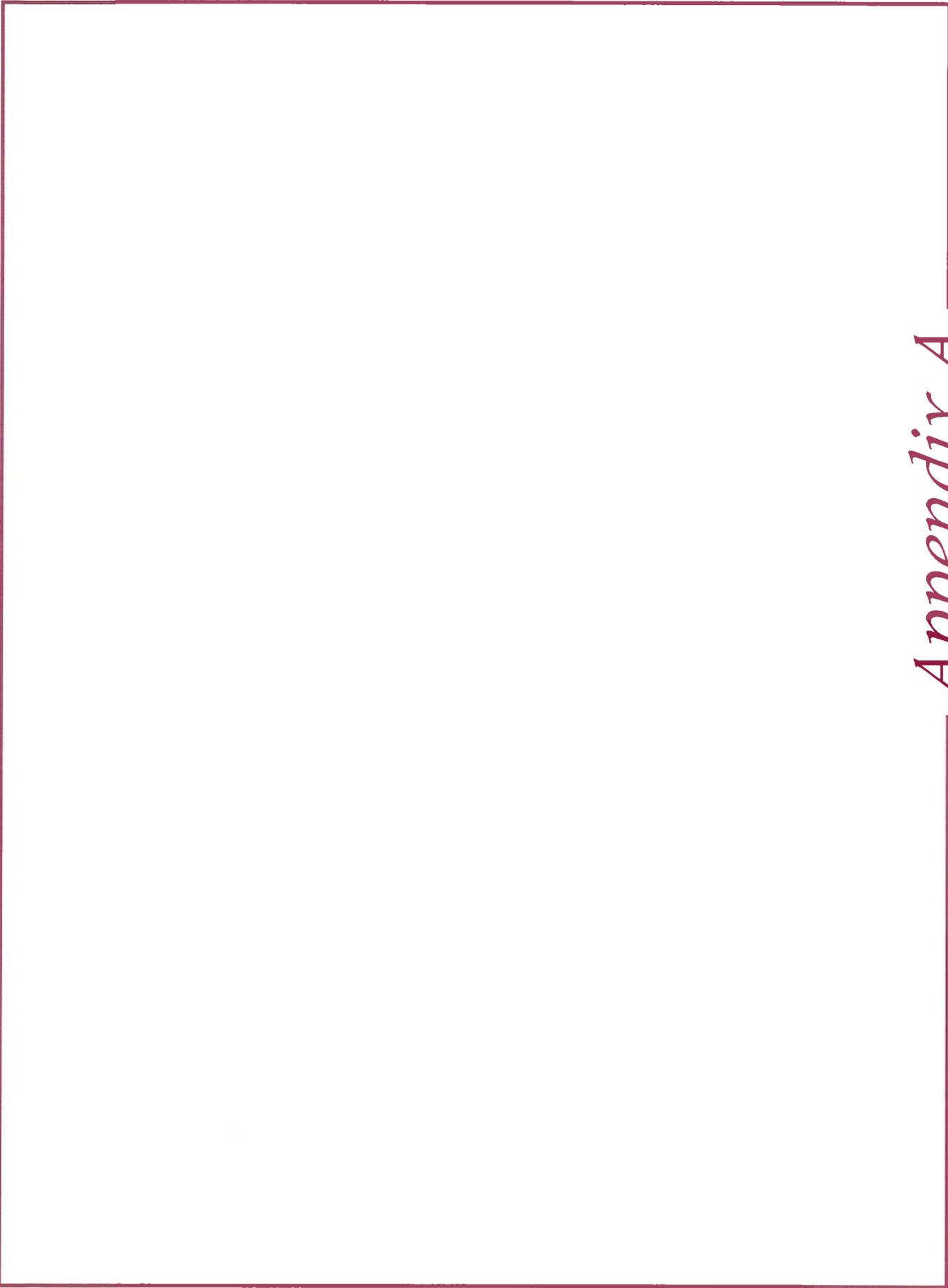
**PROPOSED CELL TOWER EXCAVATION
1360 SKI RUN BOULEVARD
SOUTH LAKE TAHOE, CALIFORNIA**

Project No. 034-22134

Date: September 2022

Approved by: MB

 **Krazan**
SITE DEVELOPMENT ENGINEERS
Offices Serving the Western United States



Appendix A

Soil Hydrological Investigation

September 14, 2022

Marchel Munnecke, CPSS # 497703

1360 Ski Run Blvd.,

South Lake Tahoe, Eldorado County, CA 96151

APN 025-580-007.

Observation to 13.5 feet:

Mrs. Munnecke, consulting soil scientist, was on site September 14, 2022, with Julie Roll and John Marshall from TRPA. A previous soil description was provided to TRPA on September 2, 2022, from the site visit on September 1, 2022. The first visit described the soil profile to a depth of 94 inches (8 feet), which had weathered bedrock at 65 inches (5.4 feet), hard bedrock 94 inches (7.8 feet), and no indicators of a seasonal groundwater, such as redoximorphic features or water seepage. The observation on September 14, 2022 extended the observation to a depth of 13.5 feet on the upper, deepest part of the pit. Hard granitic bedrock was present for the remainder of the soil profile from 8 to 13.5 feet, and there was no evidence of water seepage, or redoximorphic features that would indicate a seasonal water table. There were no indicators of groundwater or a seasonal high water table, across the entirety of the pit

Photo 2. Panorama of pit to the base level, with a maximum cut of 13.5 feet.



Tahoe Valley South Subbasin (6-005.01)
Annual Report (WY 2021)

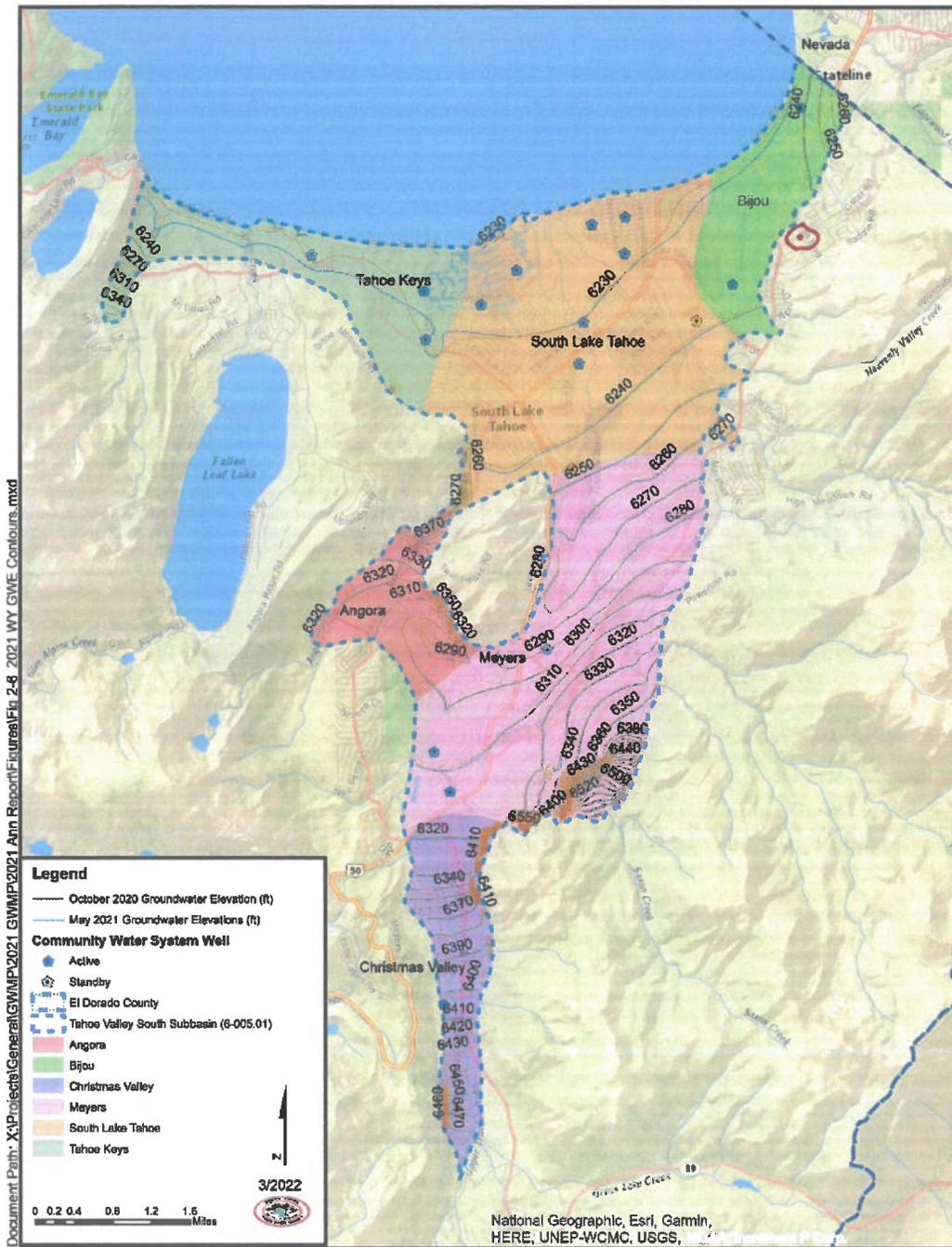


Figure 2-6. Model simulated groundwater elevations (upper 300 ft) for the TVS Subbasin, representing seasonal low (October 2020) and seasonal high (May 2021) groundwater conditions. Contour interval is 10 ft.

X:\Projects\General\GWMP\2021 GWMP\2021 Ann Report\2021 Report\2022.03.29_2021 WY TVS Subbasin Annual Report_final.docx

⊙ Approximate Location of Subject Site

September 21, 2022

Verizon Wireless
2785 Mitchell Drive, Bldg 9,
Walnut Creek, CA 94598

SAC Wireless
9020 Activity Road, Suite A
San Diego, CA 92126
(619) 736-3766



Subject: Min. Tower Foundation Depth

Carrier Site name Ski Run Blvd - PSL#444780

**Site Data: 1360 Ski Run Blvd
South Lake Tahoe, CA 96150**

Greetings,

Per your request, SAC AE Design Group has prepared this letter to discuss the minimum tower foundation depth below ground level per 2019 California Building Code (2019 CBC) requirements for the above mentioned site.

Based on site information and topography the proposed tower will be located adjacent to a slope, and therefore subject to comply with 2019 CBC section 1808.7 and figure 1808.7.1 requirements. Specifically that section and figures state the minimum clearance requirements between the edge of the foundation and slope (daylight distance). Figure 1808.7.1 shows that the minimum daylight distance shall be the minimum between 40 ft and $H/3$ where H is the total height of the slope. Therefore, to comply with this section the tower foundation must be placed at a depth below ground level sufficient to achieve this clearance.

In addition, the foundation design and its depth considered geotechnical report recommendations to ensure soil was adequate to withstand the proposed tower loading. Specifically, the depth was selected to ensure the clearance between the mat foundation (daylight distance) and the slope was sufficient to ensure soil could develop required properties for stability and safety of the tower.

Based on site conditions (slope, tower locations, mat dimensions, soil properties, etc) it was determined the top of the mat foundation must be placed at a minimum 5' below ground level to achieve the required clearance throughout the slope, and comply with 2019 CBC Figure 1808.7.1 and geotechnical report recommendations.

Therefore, the design of the tower foundation was made to comply with this minimum requirement in the California Building Code for public safety. Since lesser depths would fail to meet clearance requirements and geotechnical report recommendations it is not recommended that the depth be reduced from the designed depth per design documents and as stated in this letter.

This letter does not take precedence over the foundation design and calculations provided by others or the geotechnical report recommendations by others. It is assumed that the proposed tower and foundation will be constructed and maintained in accordance with the governing building codes and manufacturer recommendations. A rigorous structural analysis of the structure and foundation is beyond the scope of work of this letter, and those rigorous analysis provided by others are to be consulted.

This letter was prepared in accordance with the TIA-222-H *Structural Standard for Antenna Supporting Structures and Antennas* and the 2019 California Code of Regulations (CCR) Title 24 Part 2 – California Building Code (CBC).

Conclusions contained herein are based on information provided to us by Verizon. Construction not performed in accordance with the provisions contained in this letter or the attached documents will void this document. SAC AE Design Group declines any responsibility for damages that originated prior to the proposed modifications/additions or the accuracy of design/calculations done by others or for variations in the design and field conditions. Discrepancies found between this document (including attachments) and field conditions should be immediately brought to our attention to assess possible impact.

We at SAC AE Design Group appreciate the opportunity to provide our continued professional services to you. If you have any questions or concerns on this or other projects please give us a call.

Respectfully,



Emilio Valerio-Hernandez, PE, MBA, MS
Professional Engineer
SAC AE Design Group
9020 Activity Road, Suite A
San Diego, CA 92126

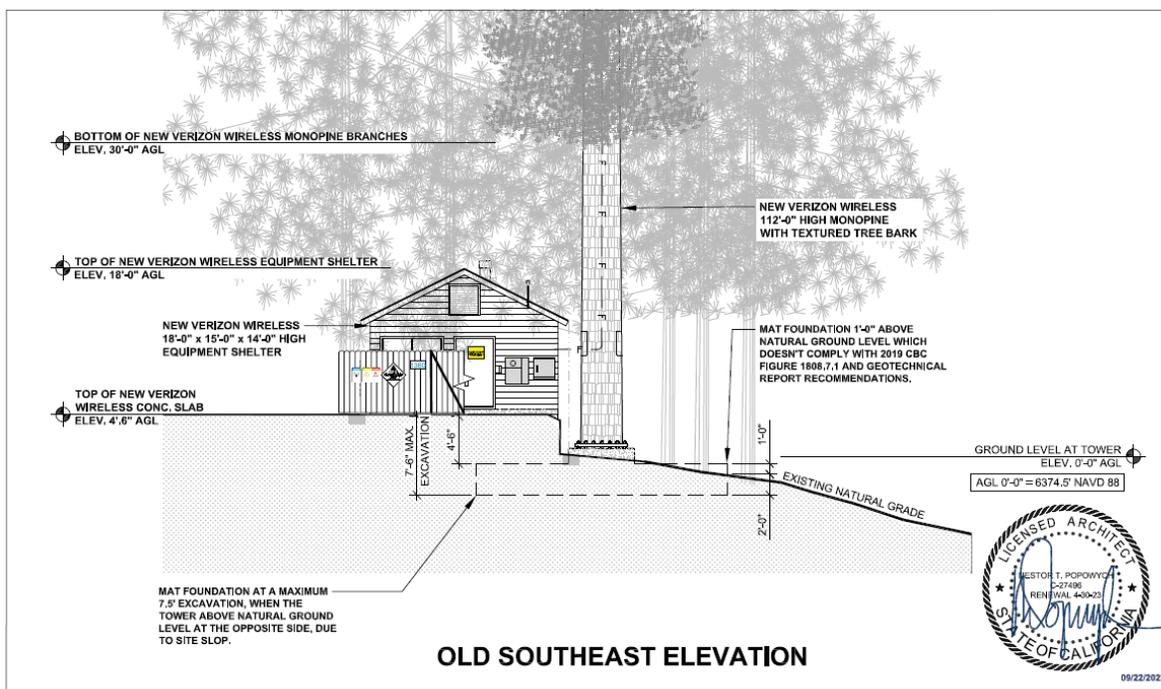
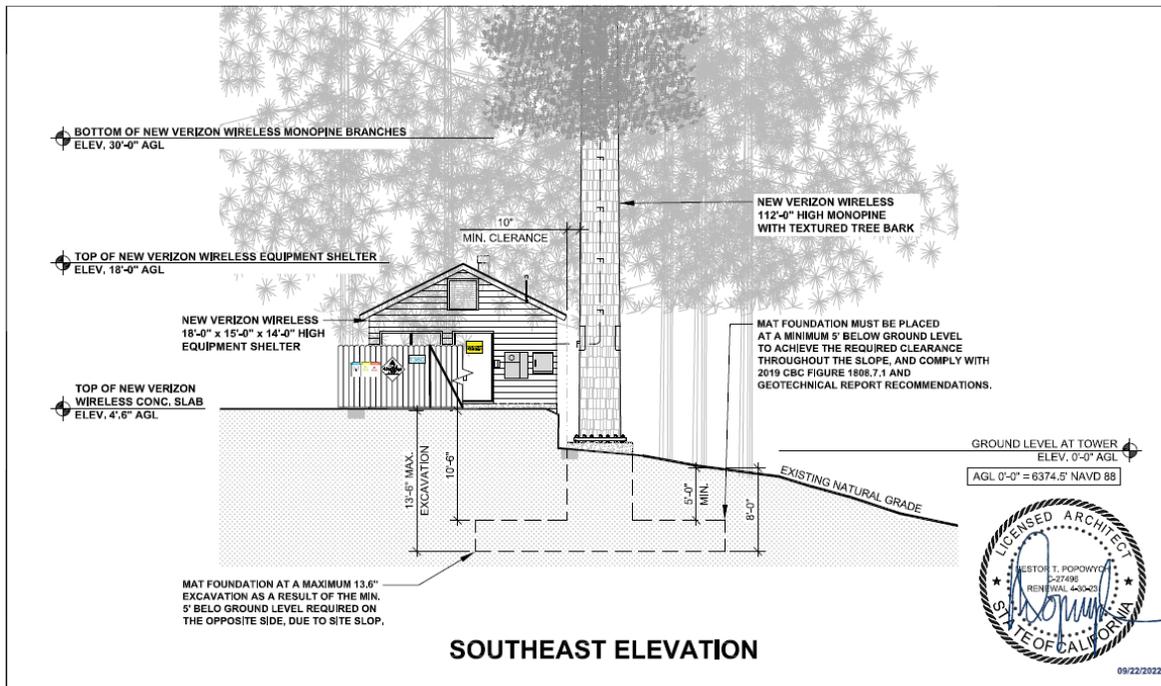
Verizon Wireless
 2785 Mitchell Drive, Bldg. 9,
 Walnut Creek, CA 94598

SAC Wireless
 9020 Activity Road, Suite A
 San Diego, CA 92126
 (619) 736-3766



Subject: Tower Foundation Excavation
Site Name: Ski Run Blvd - PSL#444780
Site Data: 1360 Ski Run Blvd
 South Lake Tahoe, CA 96150

Based on site conditions (slope, tower locations, mat dimensions, soil properties, etc) it was determined the top of the mat foundation must be placed at a minimum 5' below ground level to achieve the required clearance throughout the slope and comply with 2019 CBC Figure 1808.7.1 and geotechnical report recommendations.





Geotechnical Report Recommendations

Proposed 112.0-foot High Monopine - Verizon SKI RUN BLVD (PSL #444780):
 1360 Ski Run Blvd (38.937388, -119.950135), South Lake Tahoe, CA 96150

L191044
 07/26/2019

7.3 Mat Foundation

A mat foundation system may also be used to support the proposed Monopole. The following equation may be used for the design of mat foundation.

$$k = k_1 [(B+1)/2B]^2$$

Where:

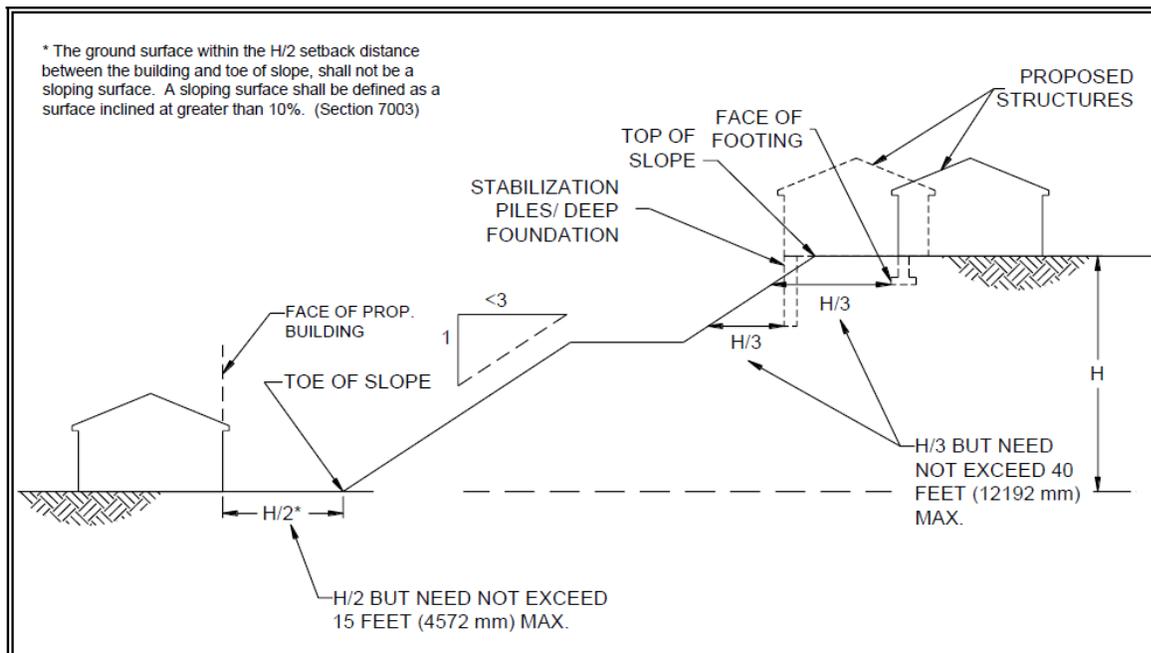
k = desired Modulus of Subgrade Reaction for full-sized footing (kcf)

k_1 = Modulus of Subgrade reaction for 1' X 1' plate

B = width of foundation (ft)

For the proposed site, k_1 of 100 kcf is recommended. An ultimate bearing capacity of 6000 psf and an allowable bearing capacity of 2000 psf may be used for foundation bearing on in-situ soil. Mat foundation should be embedded a minimum of 5-ft below the existing grade elevation. Greater embedment may be necessary to resist lateral loads due to wind and seismic forces. Mat slab thickness, reinforcement etc, should be selected by the structural engineer based on the analysis performed considering the loads anticipated and the modulus of subgrade reaction of the soil.

2019 CBC Figure 1808.7.1



MACKENZIE & ALBRITTON LLP

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September 20, 2022

VIA EMAIL

Governing Board
Tahoe Regional Planning Agency
128 Market Street
Stateline, Nevada 89449

Re: Verizon Wireless Response to Appeal of Staff Letter Regarding
Revised Soil Hydrologic Approval, File No. LCAP2019-0189
Telecommunications Facility, 1360 Ski Run Boulevard, South Lake Tahoe
Governing Board Agenda, September 28, 2022

Dear Board Members:

We write on behalf of Verizon Wireless regarding the appeal filed by Alan Miller (“Appellant”) of staff’s August 5, 2022, letter approving deeper excavation for the proposed monopine facility at 1360 Ski Run Boulevard. In our prior letter of September 24, 2022, to TRPA’s Board Chair Cindy Gustafson, attached as Exhibit A, we explained why Appellant’s initial Notice of Appeal has no merit. In response to Appellant’s request to stay all construction, we proposed a compromise to stay pouring of concrete until the Board hears this appeal on September 28, 2022. The Board Chair accepted our compromise stay. Verizon Wireless’s voluntary stay allowed TRPA’s field investigator to confirm the accuracy of prior soils/hydrological reports, validating TRPA’s approval of deeper excavation.

Appellant has now filed a Statement of Appeal, but it provides no evidence to warrant denial of the deeper excavation, and it raises irrelevant topics, as we explain below. We urge the Board to deny the appeal, and uphold staff’s approval.

I. Verizon Wireless Properly Submitted Soils/Hydro Application Materials for Deeper Excavation.

Appellant claims that Verizon Wireless’s latest geotechnical analysis does not constitute a “new” report, arguing that this is a requirement of Condition of Approval 3.F of TRPA’s permit for the monopine facility (File No. ERSP2019-0389). However, Appellant misconstrues that condition, which requires a “new soils-hydro *application*” for excavation deeper than the originally-approved 7.5 feet.

To secure approval of additional excavation to 13.5 feet, Verizon Wireless submitted the application materials identified by staff in their interpretation of Condition 3.F. These included a revised geotechnical report by Terradyne Engineering Inc. dated April 19, 2022, attached as Exhibit B, which confirmed that deeper excavation is feasible from a geotechnical perspective. The revised report referenced Terradyne's original 2019 report, Attached as Exhibit C, which found no groundwater during a test boring to 19 feet.

Assuming without conceding that additional excavation is appealable, Verizon Wireless provided the necessary application materials requested by staff for its evaluation, which staff approved in the August 5, 2022, letter. Because Verizon Wireless complied with Condition 3.F's requirement that "applicant shall submit a new soils-hydro application to TRPA, seeking approval for the proposed excavation depth," and TRPA confirmed this by its action to "approve the excavation prior to stamping final plans," the condition was satisfied. Appellant misreads Condition 3.F, and this ground for appeal must be rejected.

II. On-Site Investigation Confirms the Conclusion of Verizon Wireless's Geotechnical Analysis That There Will Be No Interference or Interception of Groundwater.

In our September 24, 2022, letter, we refuted Appellant's claim that Terradyne's geotechnical analysis of soils and hydrology is inadequate to justify excavation to 13.5 feet. While the Code generally prohibits excavations more than five feet deep, or which pose a reasonable possibility of interference with a groundwater table, either is permitted if a soils/hydrological report prepared by a qualified professional "demonstrates that no interference or interception of groundwater will occur as a result of the excavation." Code § 33.3.6(B)(1). Terradyne's analysis satisfied this requirement, finding no evidence of groundwater to a depth of 19 feet.

Appellant continues to challenge Terradyne's analysis, and he introduces a critique by Lori Carpenter dated August 27, 2022, after he filed the Notice of Appeal. Ms. Carpenter conceded that her letter "is not an professional opinion" [*sic*], and her critique was not based on an on-site observation. Instead, she recommended digging a trench five feet deep to allow for direct observation of any evidence of groundwater.

Following a predetermined construction schedule, Verizon Wireless commenced excavation to a depth of eight feet on August 26, 2022, halting when the excavator reached bedrock. TRPA sent a certified professional soil scientist, Marchel Munnecke, to the site on September 1, 2022, to conduct a field investigation of the soils excavated so far to 8.5 feet. Mrs. Munnecke prepared a soil hydrological investigation report, attached as Exhibit D, which found "no signs of water perching above this boundary" of the bedrock. The report notes that "Seasonal groundwater tables are typically perched above the bedrock layer not within the bedrock, thus a water table is not anticipated in the

requested excavation depth of 13.5 feet.” Mrs. Munnecke also found “no signs of redoximorphic features” that could indicate the presence of groundwater.

After excavation reached 13.5 feet, Mrs. Munnecke visited the site again on September 14, 2022. She prepared a second soil hydrological investigation report, attached as Exhibit E, which found “Hard granitic bedrock was present for the remainder of the soil profile from 8 to 13.5 feet, and there was no evidence of water seepage, or redoximorphic features that would indicate a seasonal water table.” The second report concluded that “There were no indicators of groundwater or a seasonal high water table, across the entirety of the pit.”

In sum, TRPA’s on-site observation of soils confirms the conclusions of Terradyne’s reports, which were the basis of staff’s approval. Appellant claims that Marchel Munnecke’s analysis should be barred from the record in this proceeding because it is dated after staff’s approval and his appeal. TRPA Rules of Procedure Article 11 regarding appeals does not bar TRPA or any other party from introducing new evidence before the Board hears an appeal. Both of Mrs. Munnecke’s reports are included in TRPA’s records for File No. LCAP2019-0189. Appellant alleges a conflict of interest, citing Rules of Procedure Section 8.4, but that is inapplicable because Mrs. Munnecke has no economic or other interest in Verizon Wireless’s monopine facility.

III. The Deeper Excavation Is Not a Major Modification.

Appellant charges that approval of deeper excavation is a “major modification.” To the contrary, it is simply a minor adjustment to one element of an approved project. Appellant cites TRPA’s description of minor and major plan revisions, but he appealed staff’s soils/hydrology approval letter of August 5, 2022, not the plan revision subsequently approved on August 17, 2022 (for which the appeal period has expired).

The deeper excavation approved by staff does not involve any change to the monopine facility footprint or its land coverage, nor any modification to above-ground facility components, height or appearance. There is no expansion of the scope of the project, and Condition 3.F of the permit specifically provided the process for approval of deeper excavation, as discussed above.

In contrast, a major plan revision is a “substantial change” that “generally includes changes to land coverage or height calculations.” *Tahoe Regional Planning Agency Application Filing Fee Schedule*, p. 2; Permitting Process, www.trpa.gov/permitting-process. Verizon Wireless’s request for deeper excavation did not cross any threshold for elevated review, as confirmed by staff’s approval through a soils/hydro application. Appellant misconstrues TRPA regulations, and this ground for appeal must be rejected.

IV. A Soils/Hydrology Application Does Not Require a New Initial Environmental Checklist.

Appellant claims that Verizon Wireless should have submitted a new Initial Environmental Checklist with its application for deeper excavation. However, staff did not request this when describing required application materials. As noted above, increasing excavation by six feet is a minor change confined below ground, with no impacts on groundwater or any other environmental resource. Verizon Wireless provided an Initial Environmental Checklist with its 2019 application for the monopine facility permit, and the deeper excavation was approved pursuant to Condition 3.F of that permit. There is no merit to Appellant's claims of environmental impacts, and this ground for appeal must be rejected.

V. Staff's Approval of Excavation in Excess of Five Feet Satisfies All Required Findings.

Appellant questions why staff's August 5, 2022, letter did not address Findings 2 and 3 for approval of excavations in excess of five feet. The letter addressed Finding 1, that "A soils/hydrologic report prepared by a qualified professional, which proposed content and methodology has been reviewed and approved in advance by TRPA, demonstrates that no interference or interception of groundwater will occur as a result of the excavation." Code § 33.3.6(B)(1). Though not mentioned in staff's letter, the deeper excavation is also consistent with Finding 2, because excavation will not damage mature trees except as allowed by the Code's tree removal provisions, and Verizon Wireless's plans include best management practices for preserving existing vegetation. Code § 33.3.6(B)(2). It also satisfies Finding 3, because the plans include best management practices for waste disposal, and the geotechnical report found that there would be no interception or interference with groundwater. Code § 33.3.6(B)(3). Verizon Wireless contractors will operate in full compliance with TRPA requirements regarding vegetation management and soils removal.

Because the proposal for deeper excavation satisfies Findings 2 and 3, this ground for the appeal must be rejected. The Board can, if it so chooses, address these findings in its final decision.

VI. Appellant Raises Issues Unrelated to Staff's Approval of Deeper Excavation.

Appellant seeks to raise numerous issues irrelevant to staff's August 5, 2022, letter. For example, he questions why Verizon Wireless's tower was not designed to different risk specifications, but such structural factors would be considered by the City of South Lake Tahoe Building Division, which already approved a building permit. The plans confirm that the structural design is based on the California Building Code and the TIA-222-H standard. Plans, Sheet MP-2.

Appellant also claims that there are discrepancies in land coverage calculations shown on the plans, but land coverage was not a topic addressed in staff's August 5, 2022, letter. It is therefore irrelevant to this appeal proceeding. The change in land coverage was a component of permit ERSP2019-0389 approved by the Hearings Officer in October 2021 and by the Board on appeal in March 2022, so the opportunity to challenge the land coverage calculations has long passed. The Board should ignore these irrelevant claims.

Conclusion

Verizon Wireless closely followed the requirements of the TRPA Code of Ordinances and Condition 3.F of its permit by submitting application materials, including an updated soils/hydro report, to obtain staff's approval of deeper excavation. Verizon Wireless's voluntary stay of pouring concrete allowed TRPA's field investigator to confirm the accuracy of prior soils/hydrology reports, validating staff's approval of deeper excavation. Appellant fails to show any noncompliance with TRPA regulations in staff's August 5, 2022, letter. We urge the Board to deny the appeal, and uphold staff's approval.

Very truly yours,



Paul B. Albritton

cc: John Marshall, Esq.
Bridget Cornell

Schedule of Exhibits

- Exhibit A: Letter from Paul Albritton to TRPA Board Chair Cindy Gustafson Responding to Appeal and Request for Stay, September 24, 2022 (Exhibits omitted)
- Exhibit B: Report by Terradyne Engineering, Inc., April 19, 2022
- Exhibit C: Report by Terradyne Engineering, Inc., July 26, 2019
- Exhibit D: Soil Hydrological Investigation by Marchel Munnecke, September 1, 2022
- Exhibit E: Soil Hydrological Investigation by Marchel Munnecke, September 14, 2022

MACKENZIE & ALBRITTON LLP

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SAN FRANCISCO, CALIFORNIA 94104

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August 24, 2022

Via email (cindygustafson@placer.ca.gov)

Cindy Gustafson
Chair of the Governing Board
Tahoe Regional Planning Agency
128 Market Street
Stateline, Nevada 89449

Re: Verizon Wireless Response to Appeal Filed by Alan Miller
Telecommunications Facility, 1360 Ski Run Boulevard, South Lake Tahoe

Dear Chair Gustafson:

On behalf of our clients Verizon Wireless and Guillian Nel, we write to oppose the appeal filed and request for stay filed by Alan Miller (“Appellant”).¹ The appeal seeks to halt construction of Verizon Wireless’s long-delayed project to bring reliable wireless communications to South Lake Tahoe and surrounding areas by installing a 112-foot cell tower disguised as a pine tree (the “Project”), which TRPA approved in a permit that became final on March 23, 2022 (the “Permit”). As we will explain, the appeal is without merit, and there are no grounds for a stay of construction. Nonetheless, Verizon Wireless will voluntarily postpone pouring any concrete for the tower foundation until the Board of Governors can hear the appeal in late September, to give TRPA an opportunity to inspect for groundwater intrusion after excavation is completed. Any broader stay is unjustified and would harm both Verizon Wireless and those who depend on its services by delaying completion of this much-needed project for another year.

FACTUAL BACKGROUND ON THE APPEAL

As is typical with cell towers, detailed structural engineering was deferred until after the Project received initial approval by the TRPA Hearing Officer, as Verizon Wireless prepared to apply for a building permit from the City of South Lake Tahoe. The structural analysis revealed that Verizon Wireless would need to excavate an additional 6 feet for the tower foundation to ensure its structural stability. Contrary to the appellant’s allegations, this was not a “major

¹ Mr. Miller purports to represent the interests of two other individuals (appeal, p. 1). This is improper. Mr. Miller is not an attorney, and we are not aware of any authority under which he could lawfully represent another person.

modification” to the Permit, but a minor change expressly provided for in the conditions of approval. Specifically, Condition 3.F provides that:

Please provide final engineering drawings, including a detailed foundation design. TRPA has approved an excavation depth of 7 feet 6 inches below ground surface (bgs). If the final design includes an excavation depth deeper than that, the applicant shall submit a new soils-hydro application to TRPA, seeking approval for the proposed excavation depth. TRPA shall approve the excavation prior to stamping final plans.

That is exactly the process that Verizon Wireless followed. Its consultant, SAC Wireless, requested the increased depth in an email to TRPA staff dated August 2, 2022, supported by revised plans, an updated structural analysis, and a geotechnical report addressing the soils and hydrology of the Project site, a copy of which is attached as Exhibit A (the “Soils/Hydro Report”).

As is standard in the industry, the Soils/Hydro Report relied on a soil sample from an 8-inch borehole drilled to a depth of 19 feet (where bedrock blocked the drill). *No evidence of groundwater was encountered for the entire 19-foot depth of the sample.* (Exhibit A, pp. 2-3 and Figure 1.) Based on this information, TRPA’s Senior Planner Julie Roll approved the additional excavation in a letter dated August 5, 2022 (copy attached as Exhibit B), noting that “it is not expected that groundwater will be encountered in this location and the excavation is allowed pursuant to TRPA Code of Ordinances Sections 33.3.6.A.2.a (accommodation of engineering requirements for above-ground structures) and 33.3.6.A.2.d (public health and safety).” On August 17, 2022, TRPA Planner Bridget Cornell, acting as the Executive Director’s Designee, approved revised plans that reflected the additional depth of excavation for the foundation to 13.5 feet.

ISSUES

While the appellant discusses a wide range of issues, most of his contentions are irrelevant and need not be addressed. Under the TRPA Code of Regulations (“Code”) and Rules of Procedure (“ROP”), the issues properly raised by this appeal are fairly narrow. These include:

- I. Is there substantial evidence to support staff’s finding that an additional 6 feet of excavation is necessary for structural integrity and/or public safety; and
- II. Has the appellant met his burden to justify a stay, by demonstrating that the additional 6 feet of excavation² will violate the Code or other applicable law, will cause substantial harm to him or the environment, and that the balance of equities justifies a stay.

² To the extent the appeal is based on issues that could have been raised in connection with the originally approved excavation depth of 7.5 feet, it is barred by the failure to exhaust administrative remedies, and by the statute of limitations, which requires any legal challenge to TRPA’s final action on a permit to be brought within 60 days. See TRPA Compact, Art. VI(j)(4). The appellant appears to admit that project opponents failed to raise any issue of groundwater impacts with respect to the original approval, stating that “concerns, comments and findings regarding ground water impacts from the foundation by the public, including myself, were limited.” (Appeal, p. 2.)

As we explain below, the answer to both questions is “no.”

THE APPEAL HAS NO MERIT

Simply put, there is no merit to the appeal because staff’s approval of the additional 6 feet of excavation was consistent with the conditions of approval and the Code, and based on substantial evidence. As discussed above, Condition 3.F. recognized the possibility that the foundation depth would need to be increased, and provided a procedure to do that.

That procedure, and the approval ultimately granted, were consistent with the Code. While the Code generally prohibits excavations more than 5 feet deep, or which pose a reasonable possibility of interference with a groundwater table, either one is permitted if a soils/hydrological report prepared by a qualified professional “demonstrates that no interference or interception of groundwater will occur as a result of the excavation.” Code Section 33.3.6.B.1. The Soils/Hydro report satisfied this requirement, finding no evidence of groundwater to a depth of 19 feet.

Appellant admits that this report constitutes a “soils/hydrologic report by a qualified professional as described in the Code” (appeal, p. 10), but misreads its normal professional caveats (acknowledging that “Ground water levels will fluctuate with seasonal climatic variations”) as evidence that the Project *will* have groundwater impacts. (Appeal, pp. 11-12.)

He also states incorrectly that Bijou Park Creek “passes directly below the Project site” (appeal, p. 12). In fact, a report by environmental scientists at Integral Consulting, Inc., confirmed that:

- The Project “is approximately 330 linear feet from the uppermost section of Bijou Park Creek drainage area, which is off the property in the north-northwest direction”;
- “The location of the proposed tower is not in the Bijou Park Creek Stream Environmental Zone”;
- “The location of the proposed tower is not within the documented 100-year flood inundation area of the creek”; and
- “The location of the proposed tower is not within areas documented to be prone to flooding.”

Evaluation of Monopine Needles, Verizon Wireless Monopine, 1360 Ski Run Boulevard, Special Use Permit File # 19-026, B. DeShields and S. Culkin, (Integral Consulting, Inc., March 3, 2022), p. 6 (excerpts attached as Exhibit C). Elsewhere, Appellant admits that he is speculating about alleged groundwater impacts, stating that the Project “intrudes on groundwater, *or may*.” (Appeal, p. 6 [emphasis added].)

Moreover, even if there *were* evidence that the additional excavation will interfere with or intercept groundwater (there is not), Section 33.3.6.B.3 provides that “the excavation can be made as an exception pursuant to subparagraph 33.3.6.A.2.” The latter section sets forth several

exceptions, including those recited in TRPA’s letter approving the additional 6 feet of excavation in this case, i.e., where required by applicable building codes or “necessary for the public safety and health.” These findings were based on substantial evidence, including:

- An updated structural analysis;
- The Soils/Hydro report (Exhibit A), which stated that a mat foundation (the type used for the Project) “should be embedded a minimum of 5-ft below the existing grade elevation”; and
- Correspondence from Verizon Wireless’s consultant explaining that “This site sits on a slope and this 13.5ft excavation depth is needed for the highest point of the slope. The tower would not have a stable foundation if we didn’t excavate at this minimum depth.” (See Exhibit D.)
- Excerpts from the original and revised plans showing that given the slope of the Project site, placing the mat at the required minimum of “5 feet below the existing grade” on the downhill side requires a maximum depth of 13.5 feet on the uphill side (see enclosed Exhibits E1 and E2).

This evidence is more than sufficient to demonstrate that the additional depth is necessary to meet building code requirements and/or protect public safety. Appellant’s argument to the contrary is based on nothing more than speculation. He asserts – without evidence – that the approved design is not required by applicable building codes because “designs are only limited by imagination, materials, money, and time.” (Appeal, p. 6.) In short, approval of the additional excavation was consistent with the Code and the conditions of approval, and based on substantial evidence, and should be upheld.

THERE ARE NO GROUNDS FOR A STAY

In order to obtain a stay, Appellant must present “credible evidence of the need for a stay pending a hearing on the appeal before the Board at its next regular meeting.” ROP 11.3. Assuming this burden is met, the Board must also consider evidence of the hardship on Verizon Wireless and Mr. Nel, and the balance of equities before deciding whether to grant a stay. *Ibid.* Here, Appellant has not met his burden, but Verizon Wireless is willing to accept a limited stay that would prevent it from pouring any concrete for the tower foundation until the Board hears the appeal on September 28. Staying any other aspects of the Project would impose harm on Verizon Wireless and the public interest that would far outweigh any impact on Appellant or the environment.

1. Appellant has failed to provide any credible evidence to justify a stay.

Even assuming that the appeal has any merit (it does not, as discussed above), Appellant has not met his burden to provide “credible evidence” of the need for a stay. Indeed, his purported justification for a stay consists entirely in the claim that the extra 6 feet in foundation depth will cause unspecified “additional harm to water quality” and that he is “personally distressed” by unspecified “potential effects” of the Project. (Appeal, p. 15.) Such vague allegations do not constitute substantial, much less “credible” evidence.

2. Verizon Wireless will accept a limited stay pending the Board's September 28 hearing on the appeal.

While Appellant has not provided any valid basis for a stay, Verizon Wireless is willing to accept a limited stay on the following terms:

- It may continue with excavation to a depth of 13.5 feet consistent with TRPA's approval;
- It will not pour any concrete for the tower foundation until after the Board hears the appeal on September 28, 2022; and
- The stay will not affect any other work on the Project, including pouring the concrete pad for the equipment shelter.

This would allow Verizon Wireless to continue with other work on the Project, while allowing inspections by TRPA's staff and/or geotechnical consultants after the excavation is complete to confirm whether there is any significant risk of prohibited groundwater impacts. The Board could then decide this issue based on a more complete record, and before Verizon Wireless pours any concrete for the disputed foundation.

3. Any broader stay is unjustified and would impose severe, irreparable harm on Verizon Wireless and the public interest in reliable wireless communications.

The limited stay described above would protect all parties by allowing Verizon Wireless to work on other aspects of the Project while preserving the Board's ability to review the alleged impact of the deeper foundation on groundwater (if any). The appeal does not even assert any grounds for a broader stay on the whole Project, and such a stay would impose irreparable harm on Verizon Wireless and those who depend on its services. Given TRPA's October 15 – May 15 ban on ground disturbance, Verizon Wireless is already on a tight schedule in order to complete all ground-disturbing work before October 15. A complete stay of construction until September 28 would make it difficult, if not impossible, to complete the "ground" work before the October 15 deadline. In addition to very significant additional costs to shut down and then resume construction (estimated to exceed \$70,000), this would mean delaying completion of the Project until well into 2023.

Delaying the Project for another year would cause irreparable harm to Verizon Wireless by preventing it from providing adequate service in the area, and thus damaging its goodwill and reputation for reliable service. More importantly, it will result in irreparable harm to the South Lake Tahoe community by compromising public safety. There is a significant gap in Verizon Wireless service in the Heavenly Valley and Bijou Park areas of the City, described in the Statement of Verizon Wireless Radio Frequency Design Engineer Charlie Schwartz, attached as Exhibit F. As Mr. Schwartz explains, the lack of adequate service in these areas results in unreliable Verizon Wireless service for emergency service personnel, residents, and visitors. This is exacerbated during winter ski season and summer holidays, when high demand exhausts

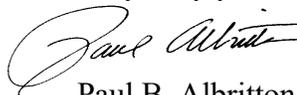
the existing network serving the area, leaving users unable to make reliable connections. The long-delayed Project is needed to provide new, reliable service coverage to the area and relieve the demand on the existing network.

Reliable wireless service is critical for communication with emergency service personnel. According to the National Emergency Number Association, there are an estimated 240 million 911 calls each year nationwide, with 80 percent or more from wireless devices in many areas. NENA 9-1-1 Statistics, <https://www.nena.org/page/911Statistics>. Visitors to South Lake Tahoe depend on their wireless devices for communications as they travel. Similarly, South Lake Tahoe residents need reliable wireless service to receive notifications and critical information from the El Dorado County Emergency Alerts system operated by the Sheriff's Office of Emergency Services (formerly called the CodeRED system).

Local public safety and transportation agencies support improved wireless service in the area in order to enhance public safety, as demonstrated by letters from the El Dorado County and Placer County Sherriff's offices, local fire protection districts, and the Tahoe Transportation District, attached as Exhibit G. As Sheriff John d'Agostini wrote, "As cellular providers continue to expand and improve their coverage throughout El Dorado County, it enhances our officer safety through better communication with our patrol vehicles and allows citizens better access to public safety resources through their personal cell phones."

For all of these reasons, we urge you to deny the Appellant's request for a stay, in lieu of the more limited stay that Verizon Wireless has proposed. While we have addressed the merits of the appeal as they bear on your consideration of the stay, we reserve the right to submit additional evidence and argument for the Board's consideration of the appeal.

Very truly yours,



Paul B. Albritton

cc (via email): John Marshall, Esq.

Schedule of Exhibits

- Exhibit A: Soils and Hydrology Report
- Exhibit B: Letter from TRPA Senior Planner Julie Roll, August 5, 2022
- Exhibit C: Excerpts from Integral Consulting, Inc. Report, Evaluation of Monopine Needles, Verizon Wireless Monopine, March 3, 2022
- Exhibit D: Correspondence from Verizon Wireless's Consultant
- Exhibit E1: Excerpts from Original Plans
- Exhibit E2: Excerpts from Revised Plans
- Exhibit F: Statement of Verizon Wireless Radio Frequency Design Engineer Charlie Schwartz
- Exhibit G: Letters of Support from Local Public Safety and Transportation Agencies

April 19, 2022

Farah Ali | Associate Project Manager | Phone: (858) 205-9629
SAC Wireless, 9020 Activity Road, San Diego, CA 92126
farah.ali@sacw.com | www.sacw.com



TERRADYNE ENGINEERING, INC.
2691 Dow Ave, Suite F
Tustin, California 92780
Phone: 657-212-5800
www.terradyne.com

Exhibit B

Re: **Geotechnical Plan Review (dated on 1/31/22)**
Verizon SKI RUN BLVD (PSL #444780)
1360 Ski Run Blvd (38.937388, -119.950135)
South Lake Tahoe, El Dorado County, CA 96150
Terradyne Project No.: L191044

References: Sheet GR-2m Sheet Title: Concrete Pad Profiles, Sections & Details: Ski Run Blvd PSL # 444780 1360 Ski Run Blvd, South Lake Tahoe, CA 96150, prepared by SAC Wireless, LLC, dated January 31, 2022.

Geotechnical Investigation Proposed 112.0-foot High Monopine Verizon SKI RUN BLVD (PSL #444780) 1360 Ski Run Blvd., South Lake Tahoe, CA 96150, SAC Wireless 5015 Shoreham Place, Suite 150, San Diego, CA 92122, Prepared by Terradyne Engineering Inc, Project No.: L191044, dated on July 26, 2019.

Updated Geotechnical Investigation Proposed 112.0-foot High Monopine Verizon SKI RUN BLVD (PSL #444780) 1360 Ski Run Blvd., South Lake Tahoe, CA 96150, SAC Wireless 5015 Shoreham Place, Suite 150, San Diego, CA 92122, Prepared by Terradyne Engineering Inc, Project No.: L191044, dated on April 19, 2022.

To whom it may concern,

The above referenced plans were reviewed by the undersigned. The plans found to be in general conformance with the intent, purpose, and recommendations in our geotechnical investigation report dated July 26, 2019 and updated geotechnical report dated April 19, 2022. From geotechnical standpoint of view, they are adequate for its intended use.

We appreciate the opportunity of providing our services for this project. If you have questions regarding this report or if we may be of further assistance, please contact us at your earliest convenience.

Respectfully Submitted,
Terradyne Engineering, Inc.


Jerry Michal, G.E.
Senior Geotechnical Engineer




Sean Prenovost, P.E. (NV)
Branch Manager



**Updated Geotechnical Investigation Report
Proposed 112.0-foot High Monopine
Verizon SKI RUN BLVD (PSL #444780)
1360 Ski Run Blvd.
South Lake Tahoe, CA 96150**

**SAC Wireless
9020 Activity Road,
San Diego, CA 92126**

**Attn: Farah Ali
Associate Project Manager**

Terradyne Project No.: L191044

April 19, 2022



TERRADYNE ENGINEERING, INC.
2691 Dow Ave, Suite F
Tustin, California 92780
Phone: 657-212-5800
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April 19, 2022

Farah Ali | Associate Project Manager | Phone: (858) 205-9629
SAC Wireless, 9020 Activity Road, San Diego, CA 92126
farah.ali@sacw.com | www.sacw.com

Re: Updated Geotechnical Engineering Report
Verizon SKI RUN BLVD (PSL #444780)
1360 Ski Run Blvd (38.937388, -119.950135)
South Lake Tahoe, El Dorado County, CA 96150
Terradyne Project No.: L191044

Dear Farah Ali:

Per your request, this letter provides updated geotechnical recommendations by Terradyne Engineering, Inc. (Terradyne) for the proposed improvements at the subject site. This Update Geotechnical Engineering Report have been made based on the review of the plans provided by SAC Wireless, dated January 31, 2022 (SAC 2022). This report provides an addendum to the geotechnical report by Terradyne dated July 26, 2019 (Terradyne 2019). All recommendations provided in Terradyne 2019 remain applicable except for amended herein.

Based on our review of the plans (SAC 2022) and the geotechnical engineering report (Terradyne 2019), it is our opinion that the proposed improvement is feasible from the geotechnical standpoint provided the recommendations contained in Terradyne 2019 and subsequent recommendations provided herein is incorporated into the project plans and specifications.

We appreciate and wish to thank you for the opportunity to service you on this project. Please do not hesitate to contact us if we can be of additional assistance.

Respectfully Submitted,
Terradyne Engineering, Inc.



Jerry L. Michal, C.E.
Senior Geotechnical Engineer - Exp. 3-31-2024


Sean Prenovost, P.E. (NV)
Branch Manager

Updated Seismic Design Parameters

Seismic design acceleration parameters in accordance with the 2019 CBC and ASCE/SEI 7-16 are presented in the Table below.

Seismic Design Parameters, 2019 CBC and ASCE 7-16	
Latitude	38.937448
Longitude	-119.95011
Site Class	D – Default
Seismic Design Category	D
MCE _R Ground Motion, S _s (period=0.2s)	1.436
MCE _R Ground Motion, S ₁ (period=1.0s)	0.504
Site-modified Spectral Acceleration Value, S _{MS}	1.723
Site-modified Spectral Acceleration Value, S _{M1}	0.905
Numeric Seismic Design Value at 0.2s SA, S _{DS}	1.149
Numeric Seismic Design Value at 1.0s SA, S _{D1}	0.603
Site Amplification Factor at 0.2s, F _a	1.200
Site Amplification Factor at 1.0s, F _v	1.796
Peak Ground Acceleration, PGA	1.2
Site Modification Peak Ground Acceleration, PGA _M	0.736

Source: ATC Hazards by Location, found at: <https://hazards.atcouncil.org>

Attachment:
ATC Hazards by Location Design Parameters

Search Information

Coordinates:	38.93744830537104, -119.95011076567611
Elevation:	6375 ft
Timestamp:	2022-04-19T15:53:56.509Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	II
Site Class:	D-default



Basic Parameters

Name	Value	Description
S_S	1.436	MCE_R ground motion (period=0.2s)
S_1	0.504	MCE_R ground motion (period=1.0s)
S_{MS}	1.723	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.149	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

▼Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.891	Coefficient of risk (0.2s)
CR_1	0.893	Coefficient of risk (1.0s)
PGA	0.614	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.736	Site modified peak ground acceleration
T_L	6	Long-period transition period (s)

SsRT	1.436	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.612	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.967	Factored deterministic acceleration value (0.2s)
S1RT	0.504	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.564	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.669	Factored deterministic acceleration value (1.0s)
PGAd	0.786	Factored deterministic acceleration value (PGA)

* See Section 11.4.8

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey [Seismic Design Web Services](#).

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Exhibit C

**Geotechnical Investigation
Proposed 112.0-foot High Monopine
Verizon SKI RUN BLVD (PSL #444780)
1360 Ski Run Blvd.
South Lake Tahoe, CA 96150**

**SAC Wireless
5015 Shoreham Place, Suite 150
San Diego, CA 92122**

**Attn: Mr. Ryan Lima
Project Manager**

Terradyne Project No: L191044

July 26, 2019

*Terradyne Engineering, Inc.
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Terradyne Engineering, Inc.
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July 26, 2019

SAC Wireless, LLC
5015 Shoreham Place Suite 150
San Diego, CA 92122
Phone: (619) 471-6359
Fax: (760) 931-0908
Email: ryan.lima@sacw.com
www.sacw.com

Attn: **Mr. Ryan Lima**
Project Manager

Re: **Geotechnical Investigation Report**
Verizon SKI RUN BLVD (PSL #444780)
1360 Ski Run Blvd (38.937388, -119.950135)
South Lake Tahoe, El Dorado County, CA 96150
Terradyne Project No.: L191044

Dear Mr. Lima:

In accordance with your request, Terradyne Engineering, Inc. has performed a geotechnical investigation at the subject site. The purpose of our investigation was to evaluate the geotechnical conditions at the site in the areas of proposed construction and to provide geotechnical parameters for design and construction.

We appreciate and wish to thank you for the opportunity to serve you on this project. Please do not hesitate to contact us if we can be of additional assistance during the Construction Materials Testing and Quality Control phases of construction.

Respectfully Submitted,
Terradyne Engineering, Inc.

Haicheng Mao, MSCE, E.I.T.
Staff Engineer

A. Wahab Noori, P. E.
Senior Engineer / RCE C-081696
Registration Exp. Date: 03/31/2020



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APPENDIX A

Figure A - Vicinity Map
Figure B - Approximate Boring Location Plan
Figure C - Regional Geological Map and Legend
Figure D - USGS Topographic Map
Figure E - CGS Seismic Hazard Information

APPENDIX B

Boring Log: B-1
Key to Classification Terms and Symbols

APPENDIX C

Laboratory Tests

APPENDIX D

ATC-127 - Applied Technology Councils/USGS Site Specific Seismic Hazard information

EXECUTIVE SUMMARY

The soil conditions at the site of the 112.0-ft High Monopine and associated cellular equipment at 1360 Ski Run Blvd, South Lake Tahoe, El Dorado County, California was explored by drilling one boring to a refusal depth of 19.0-ft. However, it should be noted, we were not able to drill at exact location of monopole due to the mature trees & constraints. Laboratory tests were performed on selected specimens to evaluate the engineering characteristics of various soil strata encountered in our test boring.

This report presents a description of subsurface conditions encountered at the site, recommended foundation systems, and design and construction criteria influenced by the subsurface conditions. It is based on data obtained from field investigations, laboratory test results and our previous experience with similar projects.

- During our operation, drilling difficulties and refusal experienced at depth 19 ft below existing grade. As such, a heavy duty drilling rig capable of drilling through GRANODIORITE (Bedrock) is highly recommended.
- Based on our California Geological Survey (CGS) research, the seismic hazard information (Figure E, Appendix A) pertaining to the subject site as follows:
 - 1) This parcel (02558077) is not within an Earthquake Fault Zone;
 - 2) This parcel (02558077) has not been evaluated by CGS for seismic landslide hazards;
 - 3) This parcel (02558077) has not been evaluated by CGS for liquefaction hazards;
- Based on a review of the existing geologic information, no major surface fault crosses through or extends toward the site. The potential for surface rupture resulting from the movement of nearby major faults is not known with certainty but is considered low.
- Based on the results of the field investigation, the proposed 112.0-ft High Monopine may be supported on a straight shaft (minimum Ø60”) drilled pier. However, drilling difficulties and challenges associated with refusal on rocks should be expected.
- The proposed 112.0-ft High Monopine may also be supported on a mat foundation system. For the design of the structure, modulus of subgrade reaction (k1) of 100 kcf is recommended. An ultimate bearing capacity of 6000 psf and an allowable bearing capacity of 2000 psf may be used for foundation bearing on in-situ soil/bedrock.
- We believe a pad & pier foundation is also another option to be considered. For the design of a pad & pier foundation system, the geotechnical parameters recommended for the straight shaft pier and mat foundation system may be utilized as needed.

- The equipment cabinets/pads may be supported on mat slab foundation system. For the design of the structure, modulus of subgrade reaction (k_1) of 50 kcf is recommended. An ultimate bearing capacity of 4500 psf and an allowable bearing capacity of 1500 psf may be used for foundation bearing on in-situ soil.
- Ground water was not encountered during the field exploration. However, Ground water levels will fluctuate with seasonal climatic variations and changes in the land use.

Detailed descriptions of subsurface conditions, engineering analysis, and design recommendations are included in this report.

1.0 INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical analysis for the proposed 112.0-ft High Monopine and associated appurtenances at 1360 Ski Run Blvd, South Lake Tahoe, El Dorado County, California. This project was authorized by Mr. Ryan Lima from SAC Wireless, LLC.

2.0 PROPOSED CONSTRUCTION

This project is a Verizon Unmanned Telecommunication Wireless Facility. It will consist of construction of the following construction within 624 SF lease area:

- New Verizon Wireless 24'-0" X 26'-0" Lease Area
- New Verizon Wireless 18'- 10" X 15'-0" Equipment Shelter on New Concrete Pad
- New Verizon Wireless 30kw Generac Standby Generator w/132 Gallon Diesel Tank (U1142)
- New Verizon Wireless GPS Antenna
- New Verizon Wireless Electrical Meter Mounted on New Equipment Shelter
- New Verizon Wireless Fiber Box Mounted on New Equipment Shelter
- New Verizon Wireless 112'-0" High Monopine
- (12) New Verizon Wireless 8' Tall Panel Antennas
- (12) New Verizon Wireless RRUS
- (4) New Verizon Wireless 6627 RAYCAPS
- New Verizon Wireless Hybrid Cables

3.0 PURPOSE AND SCOPE OF SERVICES

The purpose of our geotechnical investigation was to evaluate the subsurface and groundwater conditions of the site and provide geotechnical engineering recommendations for the design and construction of the proposed project. Our scope of services includes the following:

- 1) Drilling and sampling of one boring to a refusal depth of 19.0-ft in the project area;
- 2) Observation of the groundwater conditions during drilling operations;
- 3) Performing laboratory tests;
- 4) Review and evaluation of field and laboratory tests;
- 5) Compilation, generalization and analysis of the field and laboratory data according to the project requirements;
- 6) Preparation of recommendations for the design and construction of the structure;
- 7) Consultations with Primary Professionals and members of the design team on findings and recommendations and the preparation of a written geotechnical engineering report for their use in the preparation of design and construction documents.

The Scope of Services does not include an environmental assessment of the presence or absence of wetlands and/or hazardous or toxic materials in the soil, surface water, groundwater, or air, in the proximity of this site. Any statements in this report or on the boring log regarding odors, colors or unusual or suspicious items or conditions are strictly for the information of the client.

4.0 SITE CONDITIONS

The proposed 24-ft by 26-ft cellular site is within a commercial property with numerous trees, located in South Lake Tahoe, El Dorado County, California. There are no water features observed in the vicinity of the proposed site. The site drainage system is by sheet flow to multiple directions and generally toward north.

5.0 GEOTECHNICAL INVESTIGATION

The field exploration to determine the engineering characteristics of the subsurface materials included a reconnaissance of the project site, drilling the boring, and obtaining bulk and split-barrel samples. One soil test boring was drilled at the project site. The boring was drilled to a refusal depth of 19.0-ft below the existing ground surface.

The soil boring was performed with a drilling rig (CME-75) equipped with a rotary head. Conventional hollow stem augers were used to advance the hole and samples of the subsurface materials were obtained using a standard 2.0-inch O.D., 1-3/8-inch I.D, split-barrel sampler. The samples were identified according to depth, encased in polyethylene plastic wrapping to protect against moisture loss, and transported to the laboratory in special containers. The following samples, presented in Table No. 1, were collected as a part of our field exploration procedure:

Table No. 1

<u>Type of Sample</u>	<u>Number Collected</u>
Bulk Sample	1
Spilt Spoon Samples	5

5.1 Groundwater Information

Groundwater seepage was not encountered during the drilling operation. However, it should be noted, groundwater levels will fluctuate with seasonal climatic variations and changes in the land use. The low permeability of the soils may require several days for groundwater to enter and stabilize in the boreholes. It is not unusual to encounter shallow groundwater during or after periods

of rainfall. Surface water tends to percolate through the surface until it encounters a relatively imperious layer.

5.2 Field Log

A field log was prepared for the test boring. This log includes information concerning the boring method, samples attempted and recovered, and the presence of various materials (such as silt, clay, gravel or sand) and groundwater observations. It also includes an interpretation of the subsurface conditions between samples. Therefore, this log includes both factual and interpretive information.

5.3 Presentation of the Data

The final log represents our interpretation of the contents of the field log for the purpose delineated by our client. The final log and key to classification terms and symbols are included in Appendix B.

5.4 General Subsurface Conditions

The soils underlying the site may be grouped into two generalized strata with similar physical and engineering properties. The lines on the log designating the interface between soil strata represent approximate boundaries. The transition between materials may be gradual. The soil stratigraphy at the boring location is presented in the Boring Log. The engineering characteristics of the underlying soils, based on our field and laboratory test results, are summarized and presented in Table No. 2.

Table No. 2

<u>Stratum</u>	<u>Depth Range Feet</u>	<u>Blows Per Foot</u>	<u>Remark</u>
<u>Colluvium/Residual Soil (Qc)</u>	0.5' – 7.5'	4-12	No Groundwater encountered
<u>Bryan Meadow Granodiorite (Kbm)</u>	7.5' – 19'	50+	

The above description generally highlights the major soil stratification features and soil characteristics. The test boring log should be consulted for specific information at the boring location.

5.5 Laboratory Testing Program

In addition to field exploration, a supplemental laboratory testing program was conducted to determine additional pertinent engineering characteristics of the subsurface materials that are necessary to evaluate the soil parameters. These tests include:

- 1) Moisture & Density (ASTM D2216 & ASTM D2937)
- 2) Grain Size Distribution (ASTM D422)
- 3) Expansion Index Test (ASTM D4829)
- 4) Corrosion Potential (CT 417, CT 422, CT 532 (643))

5.5.1 Corrosion Potential Screening

A representative soil sample was tested to measure electrical resistivity, pH, soluble sulfate and chloride concentration. The results are presented on Table No. 3.

Table No.3

Sample Location/ Depth (ft)	pH	Soluble Sulfate (ppm)	Soluble chlorides (ppm)	Resistivity (Ω .cm)
B-1/0-3.0	6.64	115	76	6,000.0

Soluble Sulfate Content

A near-surface soil sample was tested during our investigation for soluble sulfate content. The result of this test indicates a soluble sulfate content of (0.0115) percent by weight or negligible sulfate exposure. As such, the soils exposed are not expected to pose a critical potential for sulfate reaction with concrete. Per ACI 318-14 Table 19.3.1.1, the requirement of Exposure Category (S) and Class (S0) may be appropriate for design where there is no cement type restriction.

Resistivity, Chloride and pH

Soil corrosivity to ferrous metals can be estimated by the soil's pH level, electrical resistivity, and chloride content. In general, soil having a minimum resistivity less than 2,000 ohm-cm is considered corrosive. Soil with a chloride content of 500 ppm or more is considered corrosive to ferrous metals.

As a screening for potentially corrosive soil, a representative soil sample was tested during our investigation to determine soil resistivity, chloride content, and pH level. The soil resistivity measurement of the sample was approximately (6,000.0) ohm-cm, chloride content was approximately (76) ppm, and the pH level was approximately (6.64). The results indicate that the

soil is mildly corrosive to ferrous metals. However, a standard corrosion protection measure is advisable to be considered in the design. It should be noted that Terradyne does not practice corrosion engineering. Our initial screening here should be construed as an assessment aid to the owner or owner's representative. A corrosion specialist should be consulted for any specific design requirement.

Concrete

Laboratory test indicated that the subject site contains soil sulfate content in the negligible range (i.e., less than 1000 part per million). However it is recommended that concrete for all construction at the site utilize a wide and commercially available Type-II Portland cement with a maximum 0.50 water/cement ratio and should comply with all the requirements of current Code. The minimum compressive strength of concrete for caisson supporting the monopole shall be 4000 psi at 28 days and maximum slump during placement shall be five inches. For all other miscellaneous appurtenances, the minimum compressive strength of concrete shall be 2500 psi at 28 days and maximum slump during placement shall be five inches. The minimum concrete cover should be 3-inches for the deep foundation and 1.5 inch for all other miscellaneous concrete elements. Final selection of the appropriate concrete design should be made by the project structural engineer based on the local laws and ordinances, and desired level of conservatism.

6.0 SEISMIC DESIGN PARAMETERS

The principal seismic hazard that could affect the site is ground shaking resulting from an earthquake occurring along several major active or potentially active faults in California. Design of the proposed improvements in accordance with current CBC requirements is intended to reduce the impact of seismic shaking on the proposed improvements. Recommended seismic design acceleration parameters in accordance with the 2016 CBC are presented in Table 4 below.

Table 4

Seismic Parameters	
Site Class	D
Seismic Design Category	D
Spectral Response (S_s)	1.571 g
Spectral Response (S_1)	0.540 g
Spectral Response (S_{MS})	1.571 g
Spectral Response (S_{M1})	0.809 g
Spectral Response (S_{DS})	1.047 g
Spectral Response (S_{D1})	0.540 g

F_a	1.000
F_v	1.500

Note: ATC-127 - Applied Technology Councils/USGS Site Specific Seismic Hazard information is attached in Appendix D. Final selection of the appropriate seismic design coefficients should be made by the structural consultant based on the local laws and ordinances, expected building response, and desired level of conservatism.

7.0 FOUNDATION RECOMMENDATIONS

7.1 Drilled Pier

Straight shaft drilled pier may be considered to support the proposed 112.0-ft High Monopine Tower. The drilled depth should be determined by the project structural engineer per geotechnical design parameters tabulated below.

7.2 Lateral Load Analysis

Since the pier will be subjected to lateral load and moment, a lateral load analysis should be conducted. Elastic pier behavior should be assumed in the process. A pier diameter of 60 inches or greater diameter may be considered for the cell tower.

Table. 5A

Depth (ft)	N-Value Range	Effective Soil Unit Wt (PCF)	Est. Cohesion (PSF)	Est. Angle of Internal Friction	Active Rankine Coeff (K_a)	Passive Rankine Coeff (K_p)
0.5-7.5	4-12	120	-	30	0.333	3.000
7.5-19	50+	135	1000	45	0.172	5.828

Table. 5B

Depth ft	Ultimate Uplift Skin Friction (PSF)	Allowable Uplift Skin Friction (PSF)	Ultimate Compression Skin Friction (PSF)	Allowable Compression Skin Friction (PSF)	Mod. Of Subgrade Reaction (KCF)
0.5-7.5	250	125	500	250	50
7.5-19	500	250	1000	500	150

7.3 Mat Foundation

A mat foundation system may also be used to support the proposed Monopole. The following equation may be used for the design of mat foundation.

$$k = k_1 [(B+1)/2B]^2$$

Where:

k = desired Modulus of Subgrade Reaction for full-sized footing (kcf)

k₁ = Modulus of Subgrade reaction for 1' X 1' plate

B = width of foundation (ft)

For the proposed site, k₁ of 100 kcf is recommended. An ultimate bearing capacity of 6000 psf and an allowable bearing capacity of 2000 psf may be used for foundation bearing on in-situ soil. Mat foundation should be embedded a minimum of 5-ft below the existing grade elevation. Greater embedment may be necessary to resist lateral loads due to wind and seismic forces. Mat slab thickness, reinforcement etc, should be selected by the structural engineer based on the analysis performed considering the loads anticipated and the modulus of subgrade reaction of the soil.

7.3.1 Equipment Cabinets/Pads

The equipment cabinets/pads may be supported on mat slab foundation system. For the design of the structure, modulus of subgrade reaction (k₁) of 50 kcf is recommended. An ultimate bearing capacity of 4500 psf and an allowable bearing capacity of 1500 psf may be used for foundation bearing on compacted soil. The slab embedment should be per minimum current code requirement. The upper 12" of all subgrades should be moisture conditioned to near optimum moisture content and compacted to minimum 90% of maximum dry density before construction of any proposed improvements. All shallow foundation system should be designed to withstand frost effect as required by the local jurisdiction and 2016 CBC, Chapter 18.

7.4 LATERAL EARTH PRESSURES

7.4.1 Passive Earth Pressure

Lateral loads may be resisted by friction provided by the soil on the base of the foundation and also by passive earth pressure. A coefficient of friction of 0.40 of dead load may be used. An allowable passive earth pressure of 350 psf per foot of depth may be used for footings poured on compacted in-situ soil/bedrock. A factor of safety of 1.5 was used in calculating passive earth pressure. Frictional resistance and passive pressure resistance may be used in combination if friction coefficient is reduced by one-third. A one-third increase in passive pressure may be used for resistance against seismic and wind loading.

7.4.2 Active Earth Pressure

Active earth pressures behind walls depend on wall movement, back fill slope, surcharge loads and back fill material.

Table No. 6

Equivalent Fluid Density	
(PCF)	Level Backfill
Active Condition	40
At-rest Condition	65

These equivalent fluid densities do not include the effect of seepage pressures, surcharge loads such as construction equipment, vehicular loads or future storage near the walls. If the basement wall or cantilever retaining wall can tilt forward to generate “active earth pressure” condition, the values under active condition should be used. For rigid non-yielding walls which are part of the building, the values “at rest condition” should be used. The compactive effort should be controlled during backfill operations. Over compaction can produce lateral earth pressures in excess of at rest magnitudes. Compaction levels adjacent to below-grade walls should be maintained between 90 and 95 percent of current standard Proctor (ASTM D1557) maximum dry density.

The backfill behind the wall should be drained properly. The simplest drainage system consists of a drain located near the bottom of the wall. The drain collects the water that enters the backfill and this may be disposed of through outlets along the base of the wall. To insure that the drains are not clogged by fine particles, they should be surrounded by a granular filter. In spite of a well-constructed toe drain, substantial water pressure may develop behind the wall if the backfill consists of clays or silts. A more satisfactory drainage system, consisting of a back drain of 12 inches to 24 inches width gravel may be provided behind the wall to facilitate to drainage.

8.0 CONSTRUCTION GUIDELINES

8.1 Construction Monitoring

As Geotechnical Engineer of Record for this project, Terradyne, should be involved in monitoring the foundation installation and earthwork activities. The performance of any foundation system is not only dependent on the foundation design but is strongly influenced by the quality of construction. Prior to construction, please contact our office so that a Foundation and Earthwork Monitoring Plan can be incorporated into the Project Quality Control Program.

8.2 Site Preparation

Site preparation consists of the removal of any organic material including tree roots, subgrade preparation and the placement of structural fill and compaction of the subgrade. The upper 12” of all miscellaneous appurtenances subgrades should be moisture conditioned to near optimum moisture content and compacted to minimum 90% of maximum dry density before construction of any proposed improvements. The project geotechnical engineer should approve the subgrade preparation, the fill materials, and the method of fill placement and compaction.

In areas where there is pavement, vegetation and all loose or excessively organic materials, cobbles, boulders and debris should be stripped to a minimum depth of six inches and removed from the site. Roots of trees to be removed within the construction areas should be grubbed to full depths. After stripping operations, the subgrade should be scarified to a depth of 6 inches prior to fill placement and recompacted to 90 percent of the maximum dry density as determined by ASTM D1557, with moisture content up to 2 percent higher than the optimum moisture. The exposed subgrade should not be allowed to dry out prior to placing structural fill. Voids caused by site preparation, such as tree and boulder removal, should be replaced with select structural fill and compacted in accordance with the select fill compaction recommendations. Proper site drainage should be maintained during construction so that ponding of surface run-off does not occur and cause construction delays and/or inhibit site access.

8.3 Drainage

Ground water seepage was not encountered during the drilling operation. Minor groundwater seepage may be encountered within the proposed foundation zone and grading excavations at the time of construction, especially after periods of heavy precipitation. Small quantities of seepage may be removed by conventional sump and pump methods of dewatering.

8.4 Temporary Drainage Measures

Temporary drainage provisions should be established to minimize water runoff into construction areas. If standing water does accumulate, it should be removed by pumping as soon as possible. Adequate protection against sloughing of soils should be provided for workers and inspectors entering the excavations. This protection should meet OSHA and other applicable building codes.

8.5 Select Structural Fill

Any select structural fill used at the site should have a Liquid Limit less than 35 and a Plasticity Index between 5 and 15. The fill should contain no particles greater than one (1) inch in diameter. The percent passing U.S. Standard Sieve No. 4 should be between 40 and 80 percent and

passing Sieve No. 40 between 10 and 50 percent. The percent passing Sieve No. 200 should be less than 20 percent.

Pit-run gravels (with some clay binders) and crushed limestone (with sufficient fines to bind the aggregate together) are examples of suitable select structural fill materials. The fill materials should be placed in loose lifts not to exceed 8 inches thick and compacted to 90 percent of the maximum dry density as determined by ASTM D1557, with moisture content within 2 percent over the optimum moisture content.

8.6 Groundwater

In areas where significant cuts (2-ft or more) are made to establish final grades for pads, attention should be given to possible seasonal water seepage that could occur through natural cracks and fissures in the newly exposed stratigraphy. Subsurface drains may be required to intercept seasonal groundwater seepage. The need for these, or other dewatering devices, on pads should be carefully addressed during construction. Our office could be contacted to visually inspect final pads to evaluate the need for such drains.

Groundwater seepage may occur several years after construction if the rainfall rate or drainage changes in the vicinity of the project site. If seepage runoff occurs towards the site, an engineer should be called on to evaluate its' effect and determine whether French drains are required at the location.

8.7 Control Testing and Field Observation

Subgrade preparation and structural fill placement should be monitored by the project geotechnical engineer or his representative. Field-tests for moisture content and relative compaction of the fill soils shall be performed by Terradyne, Inc. Location and frequency of tests shall be at our field representative(s) discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction. Any areas not meeting the required compaction should be re-compacted and retested until compliance is met.

9.0 DRAINAGE AND MAINTENANCE

Final drainage is important for the performance of the proposed construction. Landscaping, plumbing, and downspout drainage (if any) is also important. It is vital that all drainage be transported away from the site so that water does not pond, which can result in a soil volume change underneath the structures. Irrigation or plumbing leaks (if any) should be repaired as soon as possible in order to minimize the magnitude of a moisture change under the slab. Large trees and

shrubs should not be planted in the immediate vicinity of the structures, since root systems can cause a substantial reduction in soil volume in the vicinity of the trees during dry periods.

9.1 AGENCY REVIEW

All soil, geologic, and structural aspects of the proposed Project are subject to the review and approval of the governing agency(s). It should be recognized that the governing agency(s) can dictate the manner in which the project proceeds. They could approve or deny any aspect of the proposed improvements and/or could dictate which foundation and grading options are acceptable.

9.2 PLAN REVIEW

Upon completion, we should review the project plans and specifications to check that they conform to the intent of our recommendations.

9.3 ADDITIONAL GEOTECHNICAL SERVICES

Additional geotechnical services will be required subsequent to the investigation report. Additional fees will accrue for the additional services. The additional fees will depend on the scope of the additional work. A separate proposal and agreement will be prepared for the additional services. The following services are considered additional services.

- Response to questions from the reviewing agencies.
- Once plans for the proposed development are completed, the geotechnical consultant will need to review and approve the drawings.
- During construction, the geotechnical consultant will need to observe and test earthwork and observe foundation excavations for the proposed development.

10.0 LIMITATIONS

Only a shallow portion of subsurface conditions have been reviewed and evaluated during this investigation. No warranties in any respect are made as to the future performance of the subject project. More rigorous criteria could be adopted if a lower risk of future problems is desired. Conclusions, recommendations, and other information contained in this report are based upon the assumption that the subsurface conditions do not vary appreciably between and adjacent to the observation points. Although no significant variation is anticipated, it must be recognized that variations can occur. This report has been prepared for the sole use and benefit of our client. The intent of the report is to advise our client on geotechnical matters involving the proposed improvements. It should be understood that the geotechnical consulting provided, and the contents of this report are not perfect. Any errors or omissions noted by any party reviewing this report and/or any other geotechnical aspect of the project should be reported to this office in a timely

fashion. The client is the only party intended by this office to directly receive the advice. Subsequent use of this report can only be authorized by the client. Any transferring of information or other-directed use by the client should be considered "advice by the client."

Geotechnical engineering is characterized by uncertainty. Geotechnical engineering is often described as an inexact science or art. Conclusions and recommendations presented herein are partly based upon the evaluations of technical information gathered, partly on experience, and partly on professional judgment. The conclusions and recommendations presented should be considered "advice." Other consultants could arrive at different conclusions and recommendations.

Typically, "minimum" recommendations have been presented. Although some risk will always remain, lower risk of future problems would usually result if more restrictive criteria were adopted. Final decisions on matters presented are the responsibility of the client and/or the governing agencies. No warranties in any respect are made as to the performance of the project.

REFERENCES

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- Armin, R.A., and John, D.A., 1983, [Geologic map of the Freel Peak 15' quadrangle, California and Nevada, with Quaternary geology by J.C. Dohrenwend](#): U.S. Geological Survey, Miscellaneous Investigations Series Map I-1424, scale 1:62,500
- California Geological Survey (CGS) Seismic Hazard Information
<https://maps.conservation.ca.gov/cgs/EQZApp/app/#>

APPENDIX A



Not to Scale

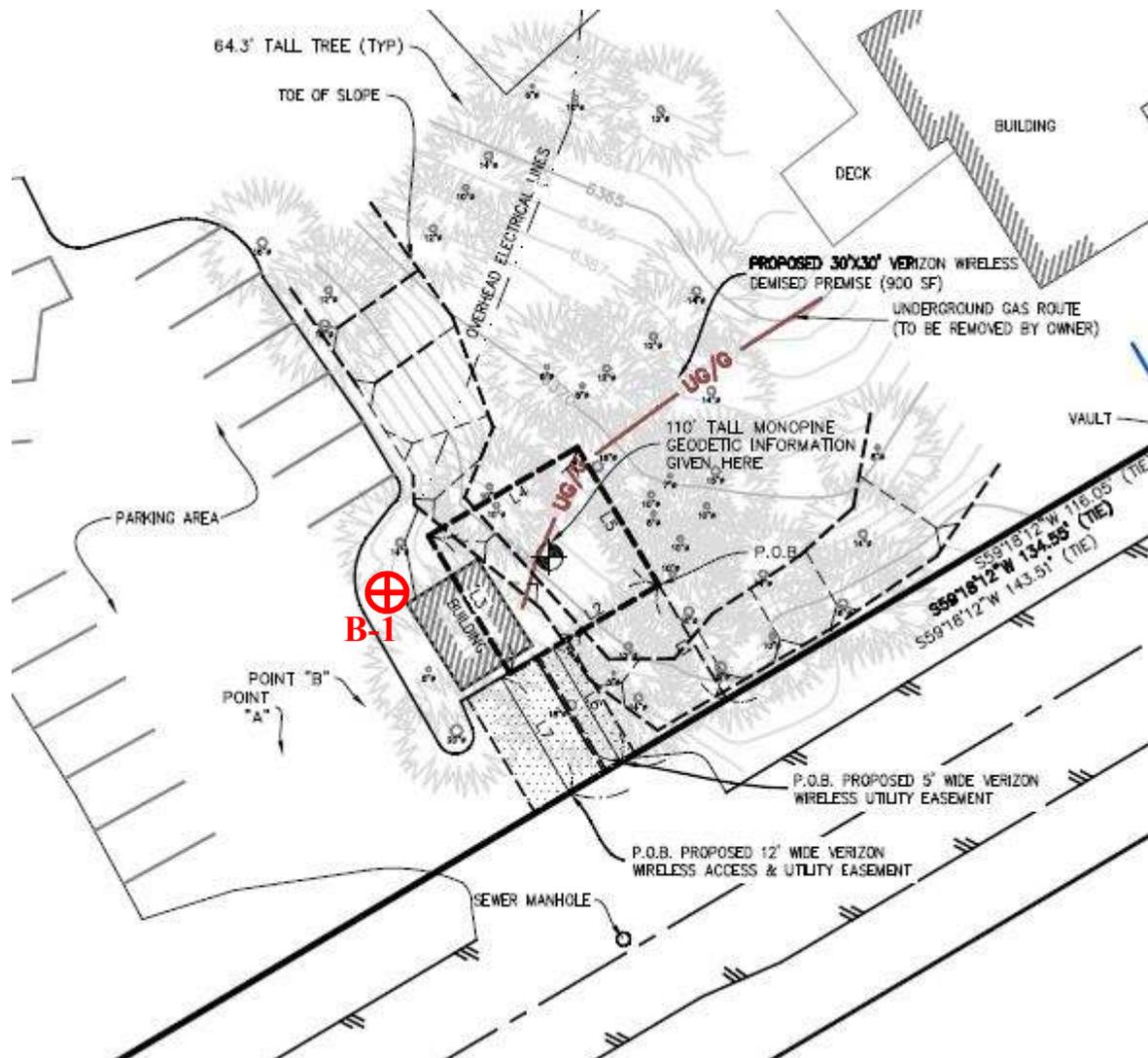
Geotechnical Investigation Report
Verizon SKI RUN BLVD (PSL #444780)
1360 Ski Run Blvd (38.937388, -119.950135)
South Lake Tahoe, El Dorado County, CA 96150

Terradyne Engineering, Inc.

Vicinity Map

Terradyne Project No: L191044

Figure: A



Legend:

 Approximate Boring Location



Not to Scale

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 Verizon SKI RUN BLVD (PSL #444780)
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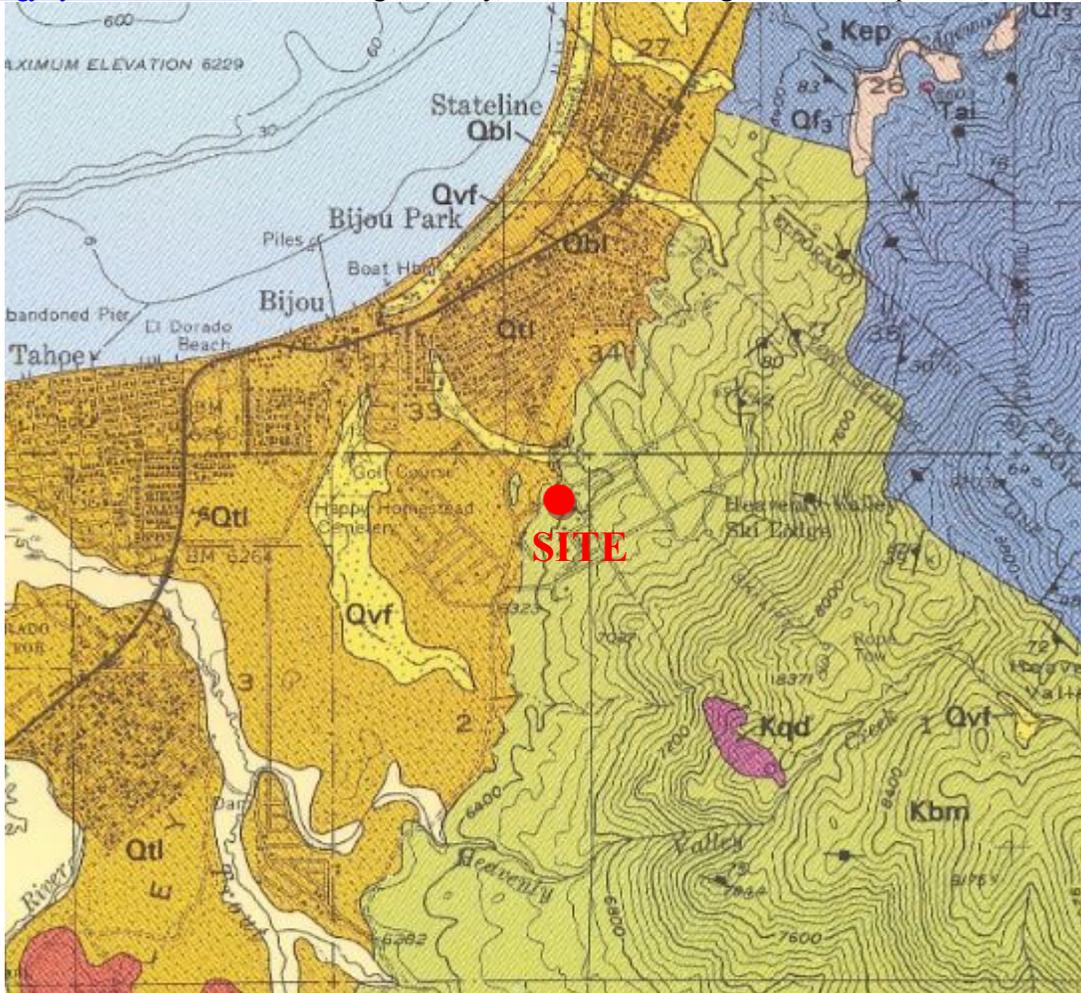
Approximate Boring Location Plan

Terradyne Project No: L191044

Figure: B

National Geologic Map Database

Armin, R.A., and John, D.A., 1983, [Geologic map of the Freel Peak 15' quadrangle, California and Nevada, with Quaternary geology by J.C. Dohrenwend](#): U.S. Geological Survey, Miscellaneous Investigations Series Map I-1424, scale 1:62,500



Kbm BRYAN MEADOW GRANODIORITE (Upper Cretaceous) — Light-gray medium-grained hypidiomorphic-granular granodiorite typically containing about 5 percent subhedral and euhedral hornblende crystals as long as 1 cm, and similar amounts of pseudo-hexagonal books of biotite in a groundmass of feldspar and quartz. Subhedral plagioclase crystals are commonly rimmed with myrmekite, and poikilitic phenocrysts of weakly micropertthitic microcline occur locally. Euhedral sphene crystals as long as 2 mm are ubiquitous. Discoid mafic inclusions are locally common. A more leucocratic, silicic phase of this pluton (stippled) is mapped in the vicinity of Horsethief Canyon and Horse Meadow. Other relatively small areas of leucocratic rock are common, particularly near margins of this pluton. K-Ar biotite ages of 87.1 ± 2 and 87.4 ± 2 m.y. (89.3 ± 2 and 89.6 ± 2 m.y., respectively, using decay constants of Steiger and Jager, 1977) are reported by Evernden and Kistler (1970) for a sample of Bryan Meadow Granodiorite collected in Horsethief Canyon

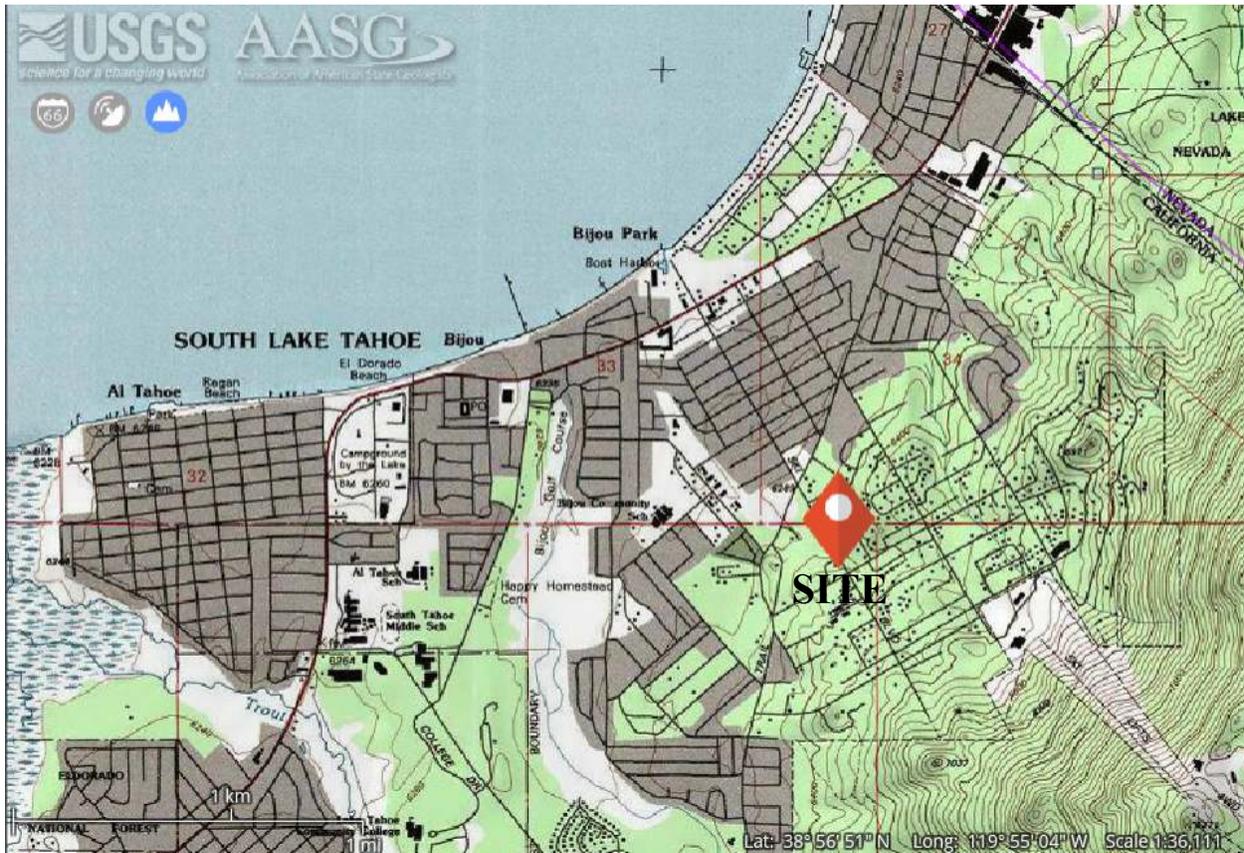
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Terradyne Engineering, Inc.

USGS Geologic Map and Legend

Terradyne Project No: L191044

Figure: C



Armin, R.A., and John, D.A., 1983, [Geologic map of the Freel Peak 15' quadrangle, California and Nevada, with Quaternary geology by J.C. Dohrenwend](#): U.S. Geological Survey, Miscellaneous Investigations Series Map I-1424, scale 1:62,500

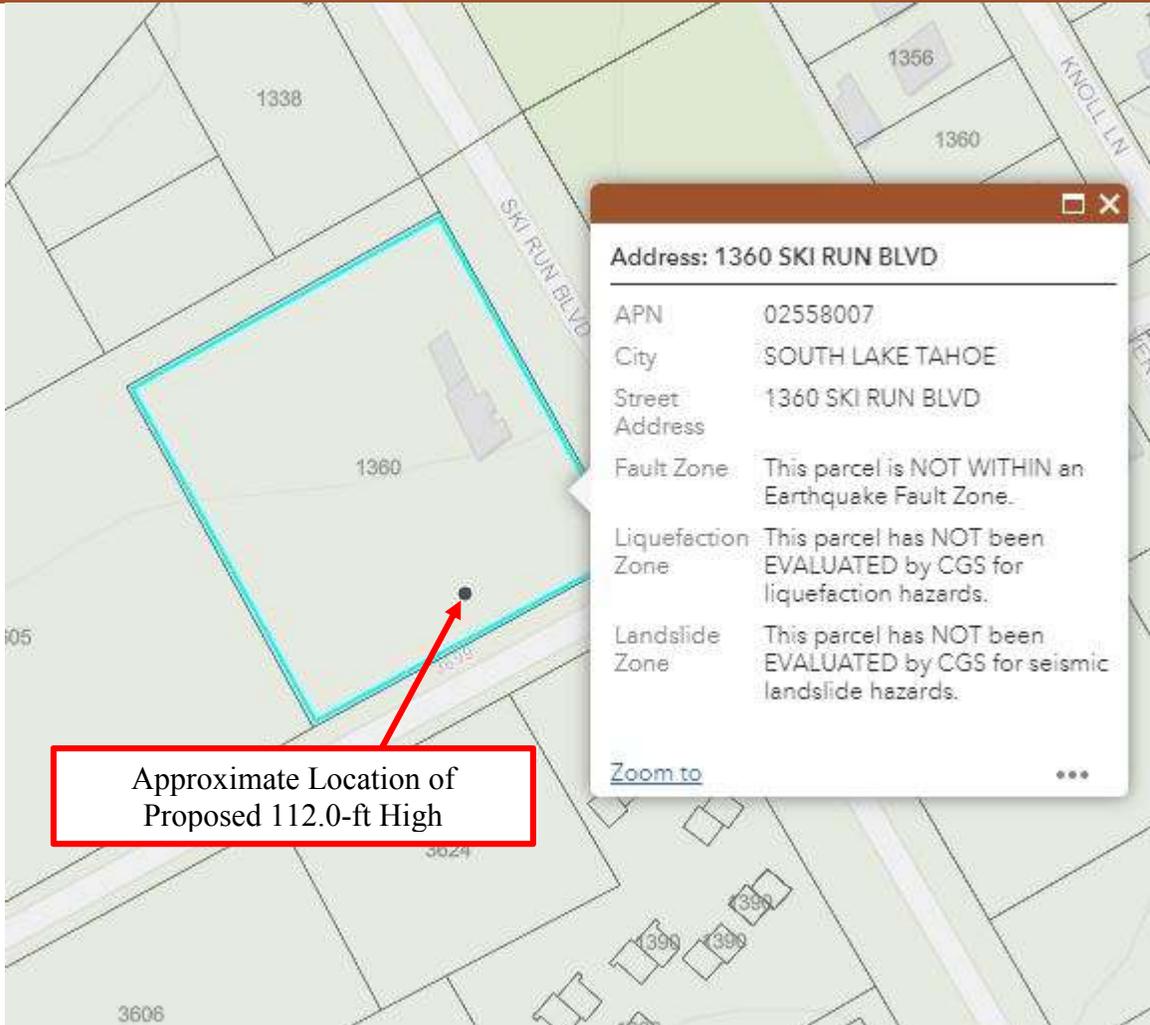
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Terradyne Engineering, Inc.

USGS Topographic Map

Terradyne Project No: L191044

Figure: D



Approximate Location of Proposed 112.0-ft High

Source: California Geological Survey (CGS)

Ref: <https://maps.conservation.ca.gov/cgs/EQZApp/app/>

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Terradyne Engineering, Inc.

CGS Seismic Hazard Information

Terradyne Project No: L191044

Figure: E

APPENDIX B

Project: **Verizon SKI RUN BLVD (PSL #444780)**
 Project Location: **1360 Ski Run Blvd, South Lake Tahoe, CA 96150**
 Project Number: **L191044**

Log of Boring 1
Sheet 1 of 1

Date(s) Drilled: 07/17/2019	Logged By: AM	Checked By: AN
Drilling Method: Standard Penetration Test using Hollow-Stem Auger	Drill Bit Size/Type: 8 in	Total Depth of Borehole: 19 feet bgs
Drill Rig Type: CME-75	Drilling Contractor: Moore Twinning Associates, Inc.	Approximate Surface Elevation: 6373 ft
Groundwater Level and Date Measured: Not encountered	Sampling Method(s): Bulk, SPT	Hammer Data: 140 lbs, 30" drop
Borehole Backfill: Native soil	Location: See boring location plan	

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Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
6373	0						TOPSOIL,			
			B-1 @ 1'	9/75	SP		0.5'-7.5' COLLUVIUM/RESIDUAL SOIL (Qc)	4.52	106.4	
			B-1 @ 0.5'-3'		SP		Poorly graded SAND with gravel, slightly silty, trace clay, dark brown, slightly moist, medium dense,	4.52		
6368	5		B-1 @ 5'	2/22	SP		Same as 1',	4.33	87.6	
6363	10		B-1 @ 10'	12/50 for 5"			7.5'-19.0' BRYAN MEADOW GRANODIORITE (Kbm)			
							GRANODIORITE, light brownish gray, slightly moist, very hard,	4.96	131.7	
6358	15		B-1 @ 15'	37/50 for 3"			Same as 10',	5.32	132.4	
			B-1 @ 19'	50 for 2"			Same as 15', became pale gray, Refusal on rocks,	1.19	138.4	
6353	20						End of Boring @ refusal depth of 19.0 ft No caving or groundwater encountered Borehole backfilled with native soil 07/17/2019			
6348	25									
6343	30									

Figure 1

Project: **Verizon SKI RUN BLVD (PSL #444780)**
 Project Location: **1360 Ski Run Blvd, South Lake Tahoe, CA 96150**
 Project Number: **L191044**

Key to Log of Boring
Sheet 1 of 1

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resistance, blows/ft	Material Type	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Unit Weight, pcf	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10	11

COLUMN DESCRIPTIONS

- | | |
|---|--|
| <p>1 Elevation (feet): Elevation (MSL, feet).</p> <p>2 Depth (feet): Depth in feet below the ground surface.</p> <p>3 Sample Type: Type of soil sample collected at the depth interval shown.</p> <p>4 Sample Number: Sample identification number.</p> <p>5 Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.</p> <p>6 Material Type: Type of material encountered.</p> | <p>7 Graphic Log: Graphic depiction of the subsurface material encountered.</p> <p>8 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.</p> <p>9 Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.</p> <p>10 Dry Unit Weight, pcf: Dry weight per unit volume of soil sample measured in laboratory, in pounds per cubic foot.</p> <p>11 REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.</p> |
|---|--|

FIELD AND LABORATORY TEST ABBREVIATIONS

- | | |
|---|--|
| <p>CHEM: Chemical tests to assess corrosivity</p> <p>COMP: Compaction test</p> <p>CONS: One-dimensional consolidation test</p> <p>LL: Liquid Limit, percent</p> | <p>PI: Plasticity Index, percent</p> <p>SA: Sieve analysis (percent passing No. 200 Sieve)</p> <p>UC: Unconfined compressive strength test, Qu, in ksf</p> <p>WA: Wash sieve (percent passing No. 200 Sieve)</p> |
|---|--|

MATERIAL GRAPHIC SYMBOLS

- | | |
|--|---|
|  Granodiorite |  Poorly graded SAND (SP) |
|--|---|

TYPICAL SAMPLER GRAPHIC SYMBOLS

- | | |
|---|---|
|  Auger sampler |  CME Sampler |
|  Bulk Sample |  Grab Sample |
|  3-inch-OD California w/ brass rings |  2.5-inch-OD Modified California w/ brass liners |

OTHER GRAPHIC SYMBOLS

- | |
|--|
|  Water level (at time of drilling, ATD) |
|  Water level (after waiting) |
|  Minor change in material properties within a stratum |
|  Inferred/gradational contact between strata |
|  Queried contact between strata |

GENERAL NOTES

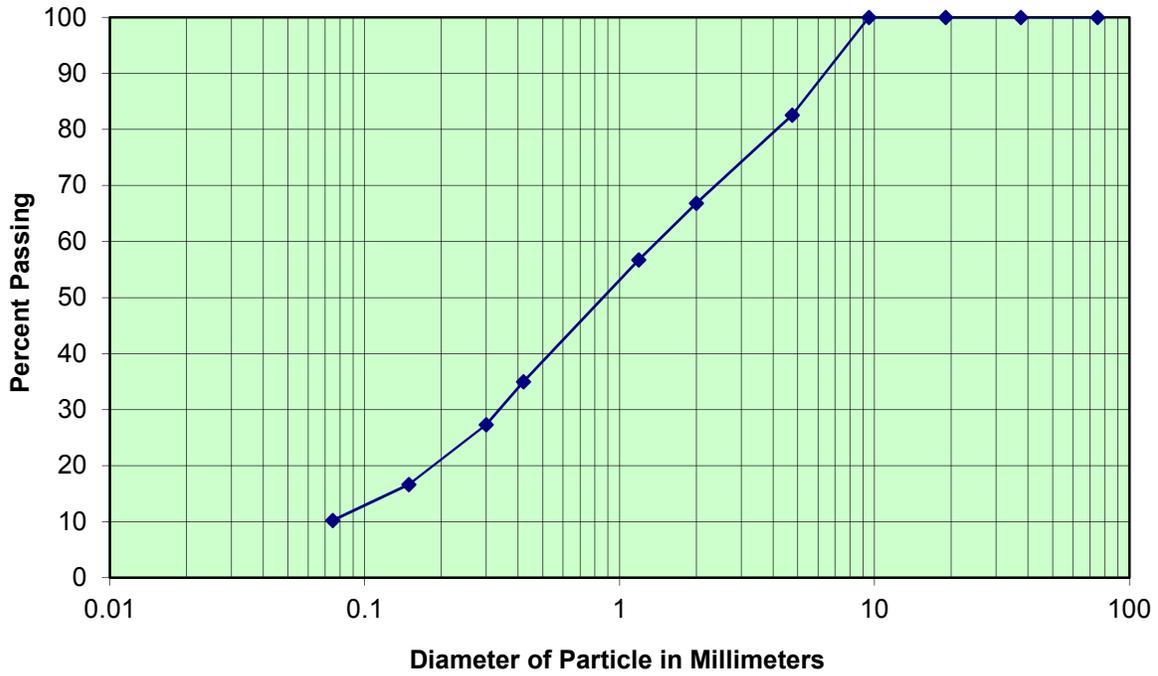
- Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

C:\Users\LAX_2\Downloads\Company_File\All_projects\Geotechnical_projects\L191044-1360_Ski_Run_Bldg_South_Lake_Tahoe_CA_96150\Boring_log\L191044-Boring_log_bgd(master_2_lab).ipf

Figure B-1

APPENDIX C

Gradation Test Results



B-1 @ 0-3.0'

Gravel	Sand	Fines
17.6%	72.8%	9.6%

Geotechnical Investigation Report
 Verizon SKI RUN BLVD (PSL #444780)
 1360 Ski Run Blvd (38.937388, -119.950135)
 South Lake Tahoe, El Dorado County, CA 96150

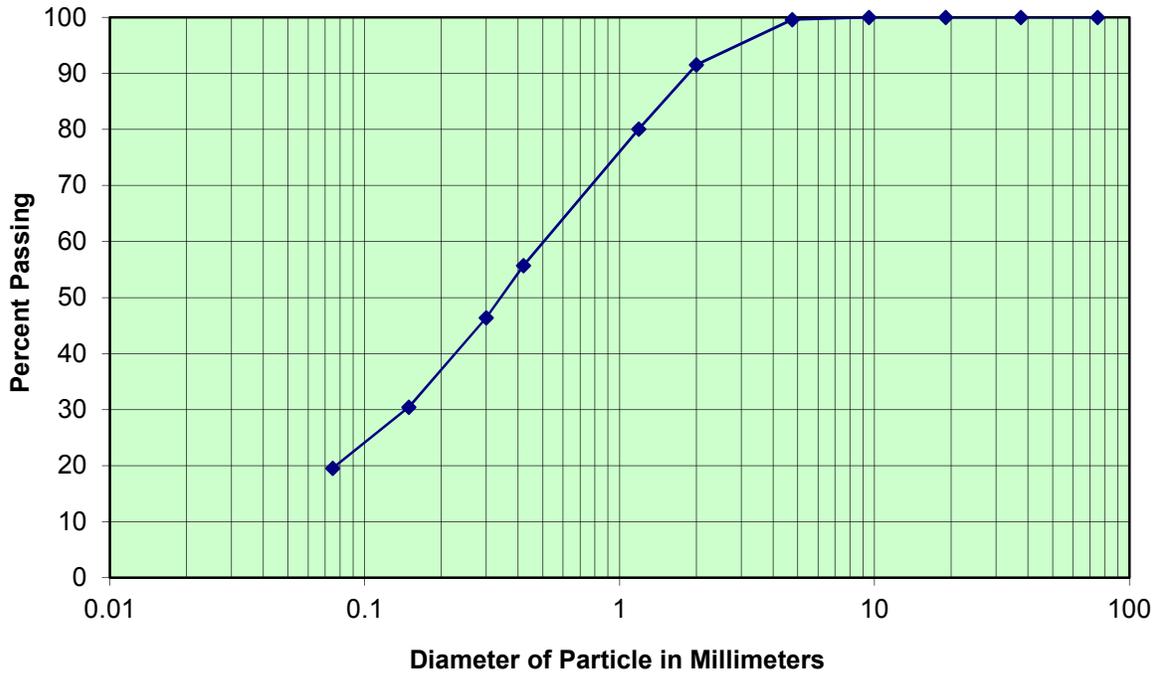
Terradyne Engineering, Inc.

Grain Size Distribution Chart

Terradyne Project No: L191044

Figure: F

Gradation Test Results



B-1 @ 10.0'

Gravel	Sand	Fines
0.3%	80.1%	19.6%

Geotechnical Investigation Report
 Verizon SKI RUN BLVD (PSL #444780)
 1360 Ski Run Blvd (38.937388, -119.950135)
 South Lake Tahoe, El Dorado County, CA 96150

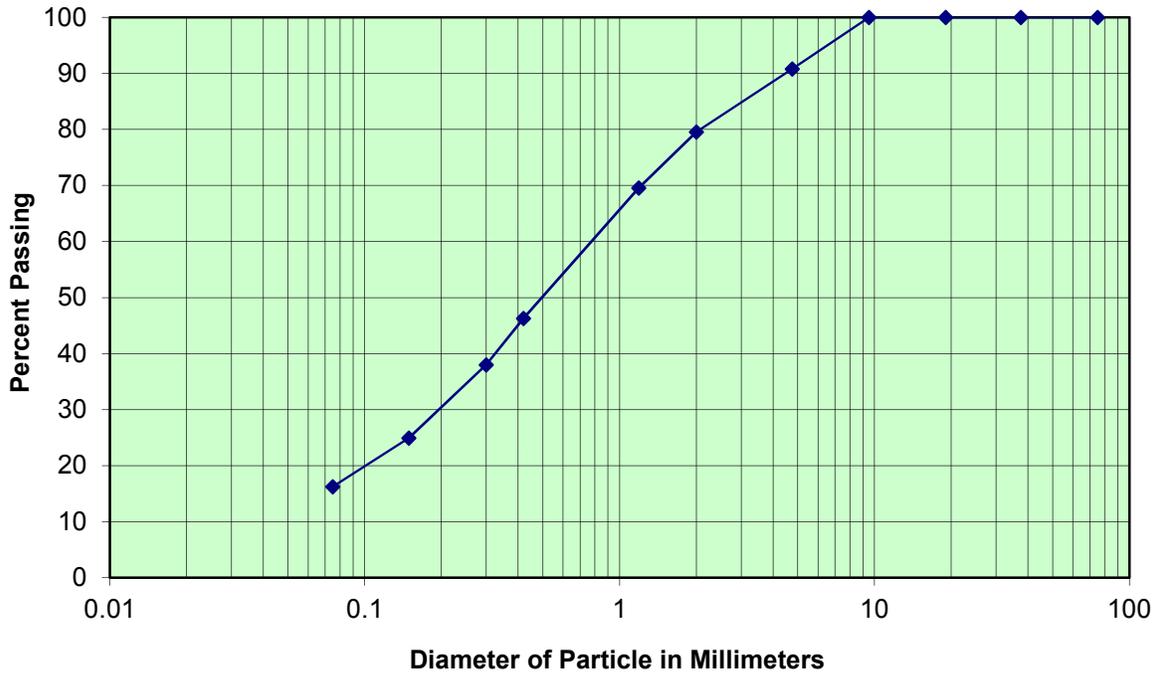
Terradyne Engineering, Inc.

Grain Size Distribution Chart

Terradyne Project No: L191044

Figure: G

Gradation Test Results



B-1 @ 15.0'

Gravel	Sand	Fines
9.2%	74.6%	16.2%

Geotechnical Investigation Report
 Verizon SKI RUN BLVD (PSL #444780)
 1360 Ski Run Blvd (38.937388, -119.950135)
 South Lake Tahoe, El Dorado County, CA 96150

Terradyne Engineering, Inc.

Grain Size Distribution Chart

Terradyne Project No: L191044

Figure: H

Expansion Index Test (ASTM D 4829)

Project Name: Verizon SKI RUN BLVD (PSL #444780)	Sample By: Moore Twinning	Date: 07/20/19
Project No. : L191044	Tested By: WS	Date: 07/24/19
Boring No.: B-1	Depth (ft): 0-3.0'	
Sample No. : Bulk Sample		
Soil Identification: Poorly graded SAND, slightly silty, trace clay, dark brown		

Dry Wt. of Soil + Cont. (g)	442.4
Wt. of Container No. (g)	0.0
Dry Wt. of Soil (g)	442.4
Weight Soil Retained on #4	77.2
Sieve Percent Passing # 4	82.5%

MOLDED SPECIMEN	Before Test	After Test
Specimen Diameter (in.)	4	4
Specimen Height (in.)	1.00	1.00
Wt. Comp. Soil + Mold (g)	757.7	770.5
Wt. of Mold (g)	367.0	367.0
Specific Gravity (Assumed)	2.65	2.65
Ring Factor	0.301	0.301
Wet Wt. of Soil + Cont. (g)	176.9	189.8
Dry Wt. of Soil + Cont. (g)	169.5	178.5
Wt. of Container (g)	100.8	105.6
Moisture Content (%)	10.8	15.5
Wet Density (pcf)	117.6	121.5
Dry Density (pcf)	106.2	105.2
Degree of Saturation (%) [S meas]	51.2	71.7

SPECIMEN INUNDATION in distilled water for the period of 24h or expansion rate < 0.0002 in./h

Date	Time	Pressure (psi)	Elapsed Time (min.)	Dial Reading (in.)
7/23/2019	12:20 PM			0.032
7/24/2019	4:40 PM		1700	0.036

Expansion Index (EI)=(Final rdg-InitialRdg)/Initial Thick)x1000	4	Plate: I
---	---	----------

APPENDIX D

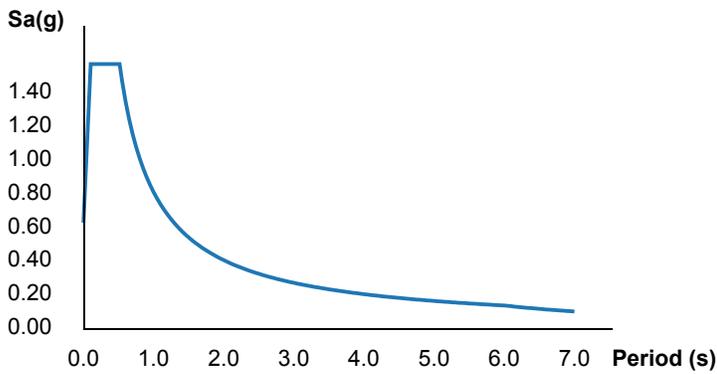
ATC Hazards by Location

Search Information

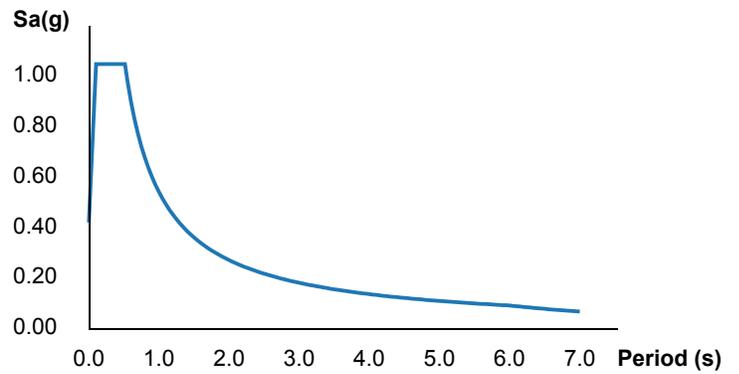
Coordinates: 38.937388, -119.950135
Elevation: 6366 ft
Timestamp: 2019-06-18T00:26:50.279Z
Hazard Type: Seismic
Reference Document: ASCE7-10
Risk Category: II
Site Class: D



MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	1.571	MCE _R ground motion (period=0.2s)
S_1	0.54	MCE _R ground motion (period=1.0s)
S_{MS}	1.571	Site-modified spectral acceleration value
S_{M1}	0.809	Site-modified spectral acceleration value
S_{DS}	1.047	Numeric seismic design value at 0.2s SA
S_{D1}	0.54	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	D	Seismic design category
F_a	1	Site amplification factor at 0.2s
F_v	1.5	Site amplification factor at 1.0s
CR_S	0.928	Coefficient of risk (0.2s)

CR ₁	0.91	Coefficient of risk (1.0s)
PGA	0.588	MCE _G peak ground acceleration
F _{PGA}	1	Site amplification factor at PGA
PGA _M	0.588	Site modified peak ground acceleration
T _L	6	Long-period transition period (s)
SsRT	1.571	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.693	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	2.429	Factored deterministic acceleration value (0.2s)
S1RT	0.54	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.593	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.775	Factored deterministic acceleration value (1.0s)
PGAd	0.833	Factored deterministic acceleration value (PGA)

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey [Seismic Design Web Services](#).

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Soil Hydrological Investigation

September 1, 2022

Marchel Munnecke, CPSS # 497703

1360 Ski Run Blvd.,

South Lake Tahoe, Eldorado County, CA 96151

APN 025-580-007.

Summary of findings:

Ms. Munnecke observed a pit partially excavated for a cell tower foundation. The pit varied in depth, with up to an 8-foot cut on the upper slope and approximately a 4 foot cut on the downslope side. Excavation was halted due to the inability of the backhoe to dig through the hard granitic bedrock. The bedrock slopes to the northeast nearly parallel to the surface topography with approximately 5 percent slope.

A pit was described in the deepest area with the smoothest wall for a soil profile description. At this location, there is 10 inches of fill material over the original soil. The buried surface horizon is present from 10 to 22 inches, and subsoil is present from 22 to 41 inches. At 41 inches, highly weathered granitic material is present with 85 percent paragravels. Roots are present in this horizon so it was not called paralithic horizon (Cr). From 65 to 94 inches, is a paralithic horizon composed of fractured and moderately weathered granitic bedrock. Fine and medium roots extend into these fractures. At 94 inches is hard bedrock. At this weathered to hard bedrock interface, there is a layer less than 1 inch thick, where roots are restricted above the bedrock. There are no signs of redoximorphic features in the form of iron concentrations or depletions in this profile.

Across the wall of this pit, the boundary to the weathered and hard bedrock is visible, and there are no signs of water perching above this boundary. In some areas the fractured bedrock is not present, and the weathered "grus" material gradually becomes less and less weathered and very difficult to dig and is root restrictive. The vegetation in this area is Jeffrey pine forest with montane shrubs such as greenleaf manzanita in the understory. There is an area of SEZ to the northwest, but it is lower in elevation and does not affect the hydrology of this area. Seasonal groundwater tables are typically perched above the bedrock layer not within the bedrock, thus a water table is not anticipated in the requested excavation depth of 13.5 feet.

Soil Profile Descriptions

Marchel Munnecke

Field Date: 9-1-2022



Photo 1a. Soil profile description, 1b. Weathered and fractured bedrock.

Pit 1:

Drainage Class: Somewhat excessively drained

Hydrologic Group: A

Parent Material: Colluvium and residuum from granitic parent material over highly weathered and hard granitic bedrock.

Slope: 8 % (estimate as location has been excavated) **Aspect:** Northeast

Description:

- Oi 0 to 2 inches; mulch and pine needles; clear smooth boundary.
- A 2 to 10 inches; gravelly loamy coarse sand, dark grayish brown (10YR 4/2), very dark grayish brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine to medium roots; many very fine to fine irregular pores; 15 percent gravels; clear smooth boundary.
- Ab 10 to 22 inches; gravelly loamy coarse sand, brown (10YR 5/3), very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, very friable, nonsticky and

nonplastic; many very fine to fine and common coarse roots; many very fine to fine irregular pores; 25 percent gravel; gradual wavy boundary.

Bw 22 to 41 inches; gravelly loamy coarse sand, brown (10YR 5/3), dark grayish brown (10YR 4/2) moist; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine to coarse roots; many very fine and fine irregular pores; 30 percent gravel; clear wavy boundary.

C 41 to 65 inches; Coarse paragravelly sand; pale brown and light yellowish brown (10YR 6/3, 10YR 6/4), dark yellowish brown (10YR 4/4) moist; structureless; moderately hard, firm, nonsticky and nonplastic; few fine to medium roots; many very fine and fine irregular pores; 85 percent gravel; clear wavy boundary.

Cr 65 to 94 inches; light grey and very pale brown (10YR 7/2, 10YR 7/3) weathered granitic bedrock with black minerals; roots are limited to cracks in the weathered granitic rock.

R 94- 96+ inches; Hard granitic bedrock.



Photo 2. Panorama of pit.

Soil Hydrological Investigation

September 14, 2022

Marchel Munnecke, CPSS # 497703

**1360 Ski Run Blvd.,
South Lake Tahoe, Eldorado County, CA 96151
APN 025-580-007.**

Observation to 13.5 feet:

Mrs. Munnecke, consulting soil scientist, was on site September 14, 2022, with Julie Roll and John Marshall from TRPA. A previous soil description was provided to TRPA on September 2, 2022, from the site visit on September 1, 2022. The first visit described the soil profile to a depth of 94 inches (8 feet), which had weathered bedrock at 65 inches (5.4 feet), hard bedrock 94 inches (7.8 feet), and no indicators of a seasonal groundwater, such as redoximorphic features or water seepage. The observation on September 14, 2022 extended the observation to a depth of 13.5 feet on the upper, deepest part of the pit. Hard granitic bedrock was present for the remainder of the soil profile from 8 to 13.5 feet, and there was no evidence of water seepage, or redoximorphic features that would indicate a seasonal water table. There were no indicators of groundwater or a seasonal high water table, across the entirety of the pit

Photo 2. Panorama of pit to the base level, with a maximum cut of 13.5 feet.



From: djinkens@charter.net
To: [John Hester](#)
Cc: [Marja Ambler](#); [Joe irvin](#); ["Robert Aaron"](#); [Hilary Roverud](#); [John Hitchcock](#)
Subject: RE: Damaged Roots, existing Trees - REQUEST BY ROBERT AARON
Date: Thursday, September 22, 2022 1:32:45 PM

Dear Mr. Hester:

I am writing to you in support of the request of local resident Robert Aaron for all information relating to the actions that have been taken by the contractor and required by TRPA to protect the existing trees at the enormous cell tower site located at 1360 Ski Run Boulevard. A photo provided by Mr. Aaron to Maria Ambler of your staff is attached here for your reference. The contractor and wealthy tower owner should be required to provide the appropriate protections to the natural environment, something that I fear has been lost in this entire process.

Regional and local government officials must ensure that our precious environment is protected from all forms of pollution and damage. *We look to you to be the leaders in this protection.*

Thank you and best wishes,

David

David Jinkens, MPA
Good Government Advocate
SOUTH LAKE TAHOE CANDIDATE
FOR CITY COUNCIL

-----Original Message-----

From: Robert Aaron <robertmaaron@gmail.com>
Sent: Thursday, September 22, 2022 11:58 AM
To: Marja Ambler <mambler@trpa.gov>; Al Miller <syngineer1@gmail.com>; Robert Berg <robertbergesq@aol.com>; julian juliangresser <juliangresser77@gmail.com>; Gregg Lien <lakelaw@sierratahoe.net>; Monica Eisenstecken <monicalaketahoe@yahoo.com>; Ben Levi <ben@dialogue.org>; Ben Lebovitz <benjaminlebovitz@gmail.com>; David Jinkens <djinkens@charter.net>
Subject: Damaged Roots, existing Trees

Hi Marja,

Please add this to the record for the 1360 ski run cell tower excavation Appeal. Please provide the permittees vegetation protection Measures, it seems they may have failed in doing so. I believe it is to potentially kill the existing trees, they have obviously compromised. I would like Full Accountability.

Please respond you have received this transmission and will put it in the record and please forward to all board members.

Marja Ambler

From: Robert Aaron <robertmaaron@gmail.com>
Sent: Thursday, September 22, 2022 1:58 PM
To: djinkens@charter.net
Cc: John Hester; Marja Ambler; Joe irvin; Hilary Roverud; John Hitchcock
Subject: Re: Damaged Roots, existing Trees - REQUEST BY ROBERT AARON

I was just informed the contractor
Struck a gas Line! Very dangerous
To our citizens!

Sent from my iPhone

On Sep 22, 2022, at 1:31 PM, djinkens@charter.net wrote:



Dear Mr. Hester:

I am writing to you in support of the request of local resident Robert Aaron for all information relating to the actions that have been taken by the contractor and required by TRPA to protect the existing trees at the enormous cell tower site located at 1360 Ski Run Boulevard. A photo provided by Mr. Aaron to Maria Ambler of your staff is attached here for your reference. The contractor and wealthy tower owner should be

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David

David Jinkens, MPA
Good Government Advocate
**SOUTH LAKE TAHOE CANDIDATE FOR
CITY COUNCIL**

-----Original Message-----

From: Robert Aaron <robertmaaron@gmail.com>
Sent: Thursday, September 22, 2022 11:58 AM
To: Marja Ambler <mambler@trpa.gov>; Al Miller <syngineer1@gmail.com>; Robert Berg <robertbergesq@aol.com>; julian juliangresser <juliangresser77@gmail.com>; Gregg Lien

<lakelaw@sierratahoe.net>; Monica Eisenstecken <monicalaketahoe@yahoo.com>; Ben Levi <ben@dialogue.org>; Ben Lebovitz <benjaminlebovitz@gmail.com>; David Jinkens <djinkens@charter.net>
Subject: Damaged Roots, existing Trees

Hi Marja,

Please add this to the record for the 1360 ski run cell tower excavation

Appeal. Please provide the permittees vegetation protection

Measures, it seems they may have failed in doing so. I believe it is to potentially kill the existing trees, they have obviously compromised. I would like Full Accountability.

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