
STAFF REPORT

Date: July 1, 2021

To: TRPA Hearings Officer

From: TRPA Staff

Subject: Mountain Meadow Retreat, LLC Land Capability Challenge, 1091 Johnson Boulevard, City of South Lake Tahoe, CA, APN 027-241-031, TRPA File Number LCAP2021-0062

Summary and Staff Recommendation:

The challenge changes Class 1b, 2,617 sq. ft. (10 percent of parcel); Class 3- 4, 788 sq. ft. (19 percent of parcel); and Class 7, 18,099 (71 percent of parcel) to entirely Class 6, 25,496 sq. ft. (100 percent of parcel). Staff recommends that the Hearings Officer review and approve the proposed Land Capability Challenge.

Required Motion:

In order to approve the proposed Land Capability Challenge, the Hearings Officer must make the following motion, based on the staff report:

- 1) A motion to approve the proposed Land Capability Challenge.

Staff recommends that the Hearings Officer take the following actions, based on this staff report.

Background:

The subject parcel is shown as Class 1b and Class 7 on TRPA Land Capability Overlay Maps (aka Bailey Land Capability maps). The Soil Conservation Service Soil Survey of Tahoe Basin Area, California-Nevada (Rogers, 1974) places the subject parcel in the Ev, Elmira loamy coarse sand, wet variant, and Efb, Elmira-Gefo loamy coarse sand, 0 to 5 percent slope map units. A land capability verification completed in 1991 maps this parcel as Class 7 (Efb, Elmira-Gefo, loamy coarse sand, Class 3, "Can't be determined", and 1b SEZ. The updated Soil Survey of Tahoe Basin Area, California, and Nevada (NRCS, 2007) maps this parcel as map unit 7444-Christopher-Gefo complex, 0 to 5% slopes and 7471, Marla loamy coarse sand, 0 to 5% slopes. The Christopher soil replaced the Elmira-Gefo map unit, while the Marla series replaced the sandy and poorly drained portion of the Elmira wet variant map unit. This parcel has a geomorphic mapping of E-2 -Depositional lands: Outwash, till, and lake deposits (Low Hazard Lands) and E-3-Depositional lands: Alluvial Land (High hazard lands). The Elmira and Gefo soils, formed in glacial outwash, are very deep, and somewhat excessively drained soils. The Elmira soil has gravelly loamy coarse sand textures from the surface to 60 inches. The Gefo soils have gravelly loamy coarse sand textures in the upper 15 inches, with gravelly coarse sand textures below. The Gefo soils have a

deeper A horizon than the Elmira soils, but both soils are poorly developed with an A over C horizon designation. The Elmira loamy coarse sand, wet variant has a loamy coarse sand surface texture, with loamy coarse sand subsurface textures to depths of about 44 inches, over clay loam and stratified fine sandy loam and sandy loam alluvial and lacustrine deposits at depth. Redoximorphic concentrations begin between 11 to 28 inches and gleyed soil colors with redoximorphic concentrations are present below 44 inches. These soils are subject to flooding and have a seasonal high-water table between 12 to 24 inches.

A land capability challenge (LCAP2021-0062) was filed by the representative Susan Simon on behalf of the owner, Mountain Meadow Retreat, LLC on May 12, 2021. Phil Scoles, of Terra Science Inc., was hired by the owner to investigate the site and produce a soils report. Mr. Scoles conducted his soil investigations on August 27, 2020, and November 5, 2020. TRPA consultant, Marchel Munnecke, reviewed Soil Pit no. 1 and Auger Hole 1 on April 23, 2021.

Findings:

One soil pit (excavated by backhoe) and two auger observations were described to 58 inches. Soil Pit no. 1 was located approximately 12 feet northwest of the carport/office, 90 feet east of Johnson Blvd, and 25 feet south of the north property line. This soil is on lake terrace formed from glacial outwash from mixed parent material. The soil at this pit is characterized by a very fine sandy loam surface texture, with very fine sandy loam, and heavy, very fine sandy loam below 21 inches. Redoximorphic features begin at 37 inches with 2 to 3% dark yellowish brown (10YR 3/6 moist) iron redoximorphic concentrations and 2% 2.5Y 5/2 matrix depletions. This soil is very deep, moderately well drained, and is a member of Soil Hydrologic Group B. The vegetation is an open Jeffrey pine forest with grasses.

Auger Hole 1 was located in the northeast (lower) part of property; about 35 feet east of the residence and 35 feet south of north property line, and 50 feet west of east property line. This soil is on lake terrace formed by glacial outwash from mixed parent material. This soil has fine sandy loam textures throughout. Redoximorphic features begin at 27 inches with 1% dark brown (7.5YR 3/4 moist) iron soft masses, which increase at 37 inches to 10% brown (7.5YR 4/4 moist) iron soft masses in the matrix. This soil is very deep, moderately well drained, and is a member of Soil Hydrologic Group B. The vegetation is a forest dominated by lodgepole pine forest with a few Jeffrey pine. The understory is open with antelope bitterbrush, vetch, and grasses.

Auger Hole 2 is on the northeast (lower) part of property; about 70 feet east of the residence, 10 feet south of north property line, and 20 feet west of east property line. This soil is on lake terrace formed by glacial outwash from mixed parent material. The soil has fine sandy loam textures throughout. Redoximorphic features begin at 31 inches with brown (7.5YR 4/4 moist) iron soft masses that increase at 41 inches to 10 to 15% strong brown (7.5YR 4/6 moist) iron soft masses in the matrix. This soil is very deep, moderately well drained, and is a member of Soil Hydrologic Group B. The vegetation is a forest dominated by lodgepole pine forest with a few Jeffrey pine. The understory is open with antelope bitterbrush, vetch, and grasses.

The soils described on the subject parcel do not match the soil types mapped in the 1974 soil survey or the 2010 LCV. They are unlike the Gefo series because they have finer textures, have a seasonal water table above 60 inches, and are moderately well drained. Gefo soils are somewhat excessively drained and do not have evidence of a seasonal high-water table in the upper 60 inches. On the eastern portion of the parcel, the soils have a similar topographic setting as the Ev soil, but they are not poorly to somewhat poorly drained. The soils also lack the subsurface, silica-cemented hardpan or fragipan that is central to the Jabu soil type. Given the presence of a seasonal high water at 31 to 46 inches from the surface (moderately well drained to well drained) and textures consistent with Hydrologic Soil Group B (HSG-B), these are an unnamed soil (designated 'XXX').

In accordance with Table 4 of Land-Capability Classification of the Lake Tahoe Basin, California and Nevada, the subject soils qualify as Class 6. Specifically, they have slopes 0 to 16%; and low to moderately low runoff potential (aka HSG-A or HSG-B).

The table below summarizes the changes in land capability as concluded by this land capability challenge.

Land Capability District	Area (sq. ft.) 1991 LCV	Area (sq. ft.) 2021 LCC
Class 7, (EfB, 0 to 5 % slope)	18,099	0
Class 6 (XXX, 0 to 16 % slopes)	0	25,496
Class 3 (From LCV, 0 to 5 % slopes)	4,788	0
1b (Ev or SEZ, any slope)	2,617	0
Total Parcel Area	25,504*	25,496

*Area itemized on LCV is 8 sf. larger than area mapped by Turner & Associates topographic survey. The 2010 LCV did not itemize sq. footage for the subject parcel. Terra Science estimated the 2010 LCV sq. footage using PDF software that is calibrated to the printed map scale. Such sq. footage is presented for comparison purposes and does not represent an official TRPA finding.

This staff report was jointly prepared by TRPA Associate Planner, Julie Roll. If you have questions on this Hearings Officer item, please contact Julie Roll at (775) 589-5247, or at jroll@trpa.gov.

BAILEY LAND CAPABILITY CHALLENGE FINDINGS

Site Information	
Assessor's Parcel Numbers: (APN)	027-241-031
TRPA File No. / Submittal Date:	LCAP2021-0062 / 5/12/2021
Owner or Applicant:	Mountain Meadow Retreat, LLC.
Address:	1091 Johnson Blvd., South Lake Tahoe, CA, 96150

Environmental Setting	
Bailey Soil Mapping Unit¹ / Hydrologic Soil Group (HSG) / Land Class / Geomorphic Hazard Unit	EfB (Elmira- Gefo loamy coarse sand, 0 to 5 percent slopes/ HSG A/ E-2 (Depositional lands: Outwash, till, and lake deposits (Low Hazard Lands) and Ev (Elmira loamy coarse sand, wet variant /HSG C/ E-3 (Depositional lands: Alluvial lands)
Soil Parent Material	Recent alluvium and glacial outwash from primarily granitic parent material
Slopes and Aspect	0 to 3 percent; sloping gently to the east- southeast.
Elevation and Datum	6,242 to 6,248 feet, Tahoe DEM
Rock Outcrops and Surface Configuration	This is a smooth, level lot, which slopes gently towards Bijou Meadow.
SEZ and Hydrology Source	This parcel was mapped 1b, Ev, Elmira wet variant, however, the soils do not meet the high-water table requirement of the Elmira soils. Redoximorphic features are below 31 inches, and primary or secondary SEZ vegetation is not present on the parcel.
Vegetation	This parcel has forest cover composed of Jeffrey pine and/or lodgepole pine. The understory is dominated by native and lawn grasses, with asters and lupine.
Ground Cover Condition	Good (vegetation 80 %, duff/mulch 70 % cover)
Site Features	Residence, A/C driveway, parking structure over driveway, stairs, wood deck in front, concrete patio, o small sheds, and a rock retaining wall.

¹ TRPA currently relies upon the [Soil Survey of Tahoe Basin, California-Nevada](#) (Rogers and Soil Conservation Service, 1974), which the Bailey Land Capability system is predicated upon.

Field Investigation and Procedures	
Consultant and Address	Terra Science, Phil Scoles Post Office Box 2100, Portland, Oregon 97208-2100
TRPA Staff Field Dates	August 27, 2020 (Scoles) and April 23, 2021 (Munnecke, TRPA)
SEZ Mapping / NRCS Hydric Soil	None present
Number of Soil Pits or Auger Holes and Description Depth	1 backhoe excavated pit, to 58 inches and two auger observations to 58 inches
Additional or Repetitive TRPA Sample Locations	Mrs. Munnecke auger and observed the soil features near Soil Pit no. 1 and at Auger Hole 2 (Attachment B).
Representative Soil Profile Descriptions	See attachment B for 1091 Johnson Blvd., South Lake Tahoe, El Dorado County, APN 027-241-031, by Terra Science.
Areas Not Examined	Residence, A/C driveway, parking structure over driveway, stairs, wood deck in front, concrete patio, small sheds, and a rock retaining wall.

TRPA Findings	
2006 Soil Survey Map Unit	7444-Christopher-Gefo complex, 0-5% slopes (Class 7) and 7471-Marla coarse loamy sand, 0-5% (Class 1b)
Consultant Soil Mapping Determination and Rationale	Based on slopes and soil characteristics this parcel is mapped entirely as capability Class 6- XXX, 0 to 16 % slopes. The soils described on the subject parcel do not match the soil types mapped in the 1974 soil survey or the 2010 LCV. They are unlike the Gefo series because they have finer textures, have a seasonal water table above 60 inches, and are moderately well drained. Gefo soils are somewhat excessively drained and do not have evidence of a seasonal high water table in the upper 60 inches. On the eastern portion of the parcel, the soils have a similar topographic setting as the Ev soil, but are not poorly to somewhat poorly drained. The soils also lack the subsurface, silica-cemented hardpan or fragipan that is central to the Jabu soil type. Given the presence of a seasonal high water at 31 to 46 inches from the surface (moderately well drained to well drained) and textures consistent with Hydrologic Soil Group B (HSG-B), these are an unnamed soil (designated 'XXX').
Slope Determination	0 to 3 % slopes.
TRPA Conclusion(s)	TRPA concurs with consultants' determination and rationale above.
Applicable Area	See parcel map for soil delineations.

Attachments:

- A. Site Plan
- B. Land Capability Analysis for 1091 Johnson Blvd., South Lake Tahoe, El Dorado County, CA (APN 027-241-031) by Terra Science
- C. Photographs

Attachment A

Site Plan

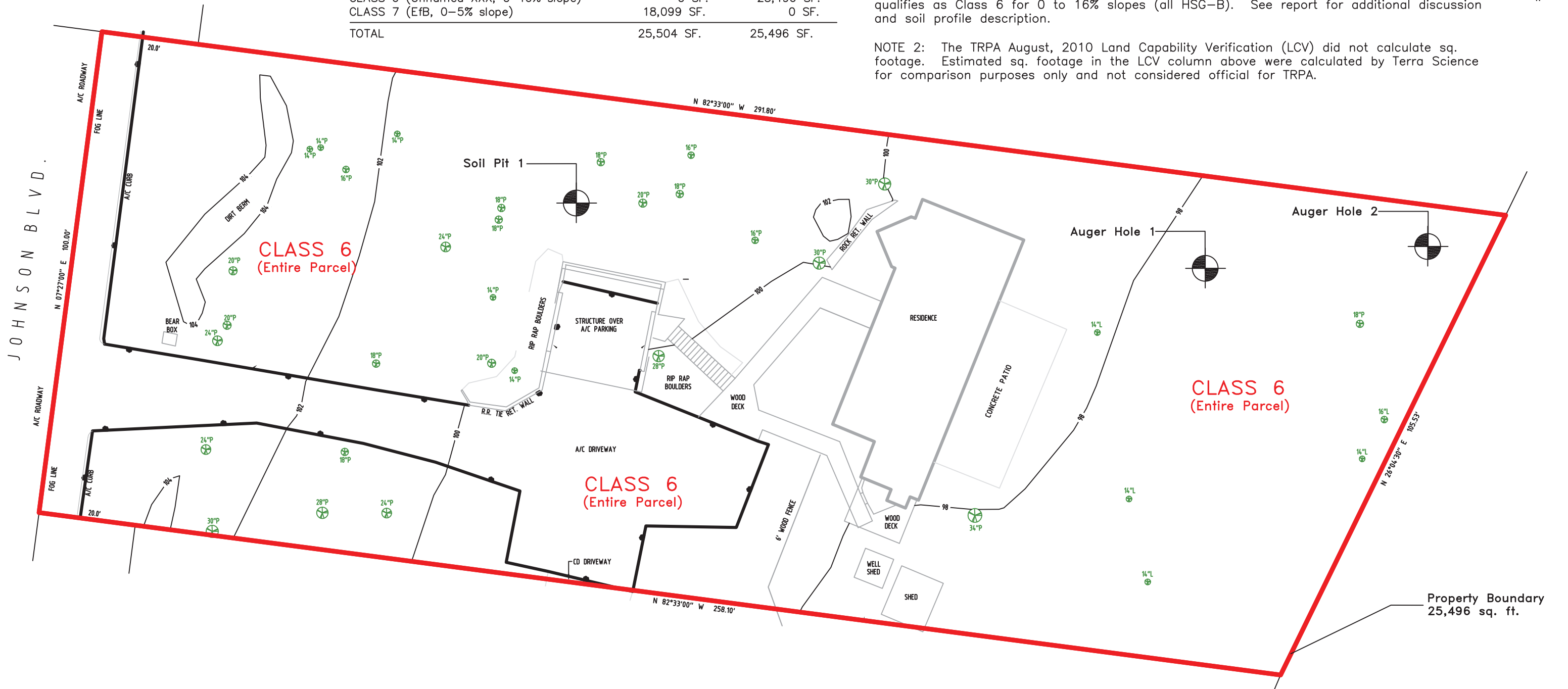
LAND CAPABILITY FINDINGS -- See Notes

LOT AREA = 25,496 S.F. (0.59-AC.)

LAND CAPABILITY CATEGORY	AUG. 2010 LCV (ESTIMATED)	FEB. 2021 LCC (TERRA SCI.)
CLASS 1B (EV or SEZ, any slope)	2,617 SF.	0 SF.
CLASS 3 (from LCV, 0-5% slope)	4,788 SF.	0 SF.
CLASS 6 (Unnamed XXX, 0-16% slope)	0 SF.	25,496 SF.
CLASS 7 (EfB, 0-5% slope)	18,099 SF.	0 SF.
TOTAL	25,504 SF.	25,496 SF.

NOTE 1: Land Capability Analysis conducted by soil scientist, Phil Scoles on August 27 and November 05, 2020. The onsite soil has fine sandy loam textures throughout (lake terrace deposit from glacial outwash). Soil conditions for the subject property are similar to the mapped EfB soil (1974 soil survey), except the soil has a seasonal high water table 31 to 46 inches from the surface. Such wetness is apparent by >5% Fe redox soft masses in the matrix, which indicates the soil is moderately well to well drained. The central concept of the EfB soil does not include well drained and moderately well drained. As such, the onsite soil is unnamed (designated as XXX). In accordance with Table 4 of the Land-Capability of Lake Tahoe Basin, California-Nevada (Bailey, R.G.), this unnamed soil qualifies as Class 6 for 0 to 16% slopes (all HSG-B). See report for additional discussion and soil profile description.

NOTE 2: The TRPA August, 2010 Land Capability Verification (LCV) did not calculate sq. footage. Estimated sq. footage in the LCV column above were calculated by Terra Science for comparison purposes only and not considered official for TRPA.

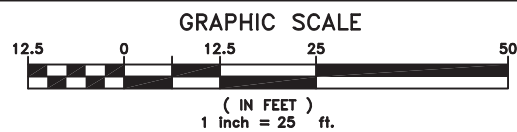


SOURCE: Adapted from Turner & Associates, Inc. Land Surveying topographic survey, December, 2020.

Terra Science, Inc.
Soil, Water, & Wetland Consultants

LAND CAPABILITY ANALYSIS FOR
ROBERT MCINTYRE PARCEL
1091 Johnson Boulevard
South Lake Tahoe, El Dorado County, Calif.
APN: 027-241-031

EXISTING CONDITIONS AND
LAND CAPABILITY CLASSES



February 2021

AGENDA ITEM NO. V. A

FIGURE
C-1

Attachment B

Land Capability Analysis for 1091 Johnson Blvd., South Lake Tahoe, El Dorado County, CA

(APN 027-241-031) by Terra Science

TERRA SCIENCE, INC.

Soil, Water & Wetland Consultants

**LAND CAPABILITY ANALYSIS FOR
1091 JOHNSON BLVD., SOUTH LAKE TAHOE,
EL DORADO COUNTY, CAL. (APN 027-241-031)**

Prepared for

Mountain Meadow Retreat I, LLC
Post Office Box 10938
South Lake Tahoe, CA 96158

And

Simon Environmental Planning
Post Office Box 9462
South Lake Tahoe, CA 96158

Prepared by

TERRA SCIENCE, INC.
Post Office Box 2100
Portland Oregon 97208-2100

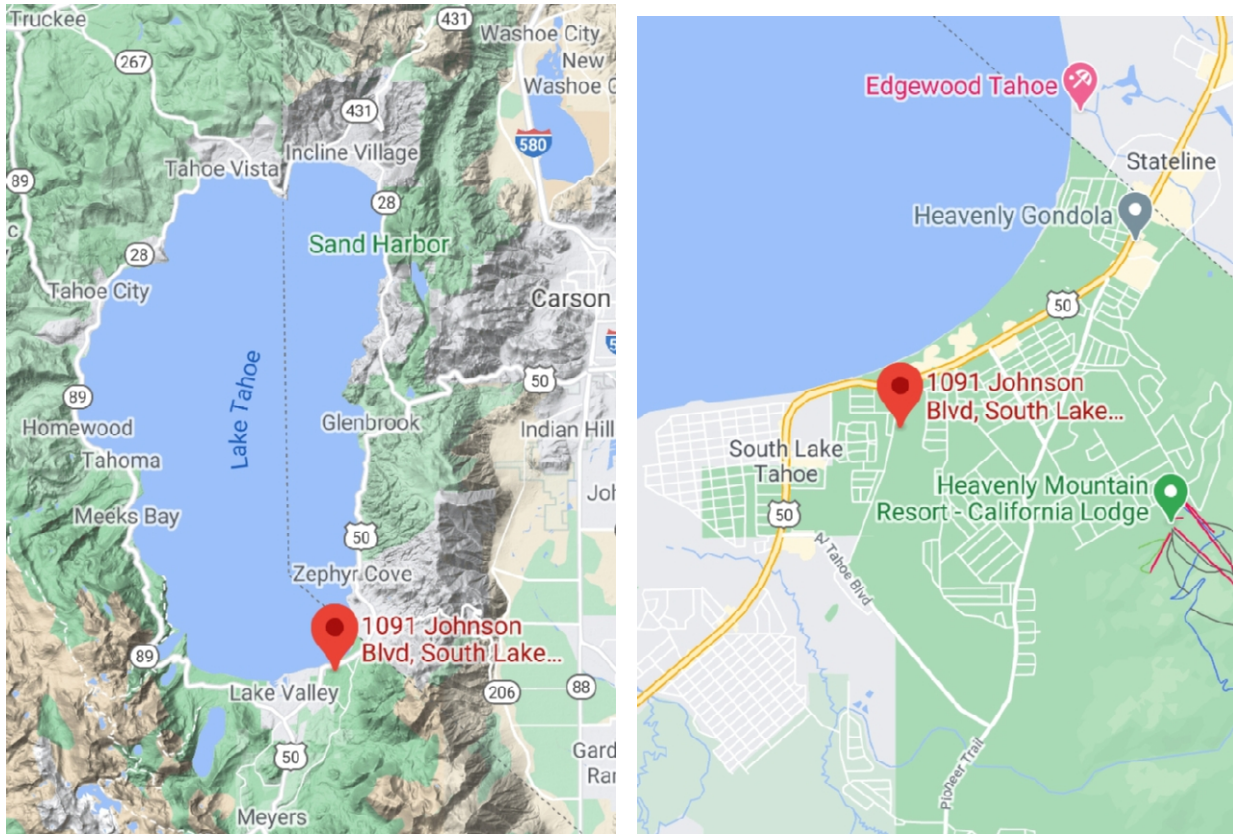
TSI PROJECT 200827-1

FEBRUARY 2020 (FINAL)

**LAND CAPABILITY ANALYSIS FOR
1091 JOHNSON BLVD., SOUTH LAKE TAHOE,
EL DORADO COUNTY, CAL. (APN 027-241-031)**

Introduction and Purpose

At the request of property owner Mountain Meadow Retreat I, LLC, Terra Science conducted a land capability analysis of his residential property located at 1091 Johnson Blvd., in the north-center part of South Lake Tahoe, California. The purpose of this analysis is to examine onsite soils and determine the land capability classification, as per Tahoe Regional Planning Agency (TRPA) regulations. This 0.59-acre (25,504 sf.) property consists of a single-family residence, carport/office, paved driveway, decks/patio, lawn backyard and open space. Elevation falls approximately 9 feet from the west edge to the east edge of the parcel.



Vicinity map (above left) and shaded relief map (above right) for 1091 Johnson Blvd., South Lake Tahoe, Cal. Project is situated on glacial outwash (lake terrace) landform. This landform slopes to the north and associated stream flow to the north (toward Lake Tahoe).

Land Capability Analysis For 1091 Johnson Blvd., South Lk. Tahoe (APN 027-241-031)

The property has natural slopes of 2 percent, which dip to the east by southeast. The only area of apparent grading is the vicinity of the residence and carport/office. Impromptu soil auger holes identified several inches of old fill material (presumably for past site construction). Vegetation consists mostly of Jeffrey pine and lodgepole pine trees, with understory of Idaho fescue, aster, lupine, and lawn grasses (bluegrass, bentgrass, etc.). Where present, natural ground cover consists of decomposing pine needles, plus other forest litter (only little exposed mineral soil near residence perimeter).

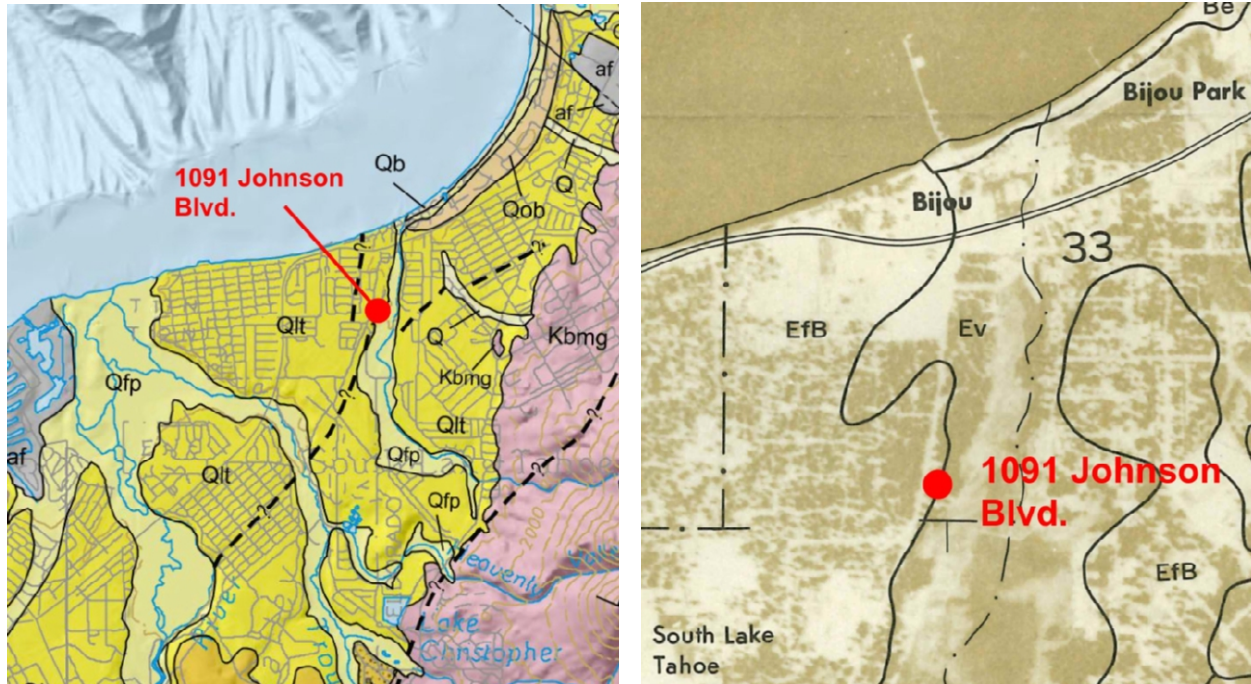
Past Mapping and Classification

The subject property is situated on a glacial outwash terrace (aka lake terrace) oriented south to north. The underlying geologic material is mapped having Pleistocene and Holocene sands and gravels, namely Qlt-Lacustrine terrace deposits and Qfp-Flood plain deposits (California Department of Conservation mapping by Saucedo, G., 2005). Based on soil materials exposed during the field investigation, the predominant mineralogy is granitic. The local topography slopes to the east by south toward Bijou Creek, which flows north to Lake Tahoe.

The soils for this vicinity were originally described in Soil Survey of the Lake Tahoe Basin, California-Nevada (Roger, J., 1974). Specifically, Soil Conservation Service (now Natural Resources Conservation Service, NRCS) mapped this vicinity as EfB-Elmira-Gefo loamy coarse sand, 0 to 5% slopes and Ev-Elmira loamy coarse sand, wet variant. The EfB soil is shown as a narrow band along the west edge of the subject parcel and Ev occurring across the majority of the property. Such mapping is a predictive tool based on years of field research that correlates soil formation factors like parent material, landform, slope, aspect, mineralogy, depth, drainage, stoniness, age (weathering) and vegetation patterns. Such mapping does not infer that soil conditions were verified for a particular parcel and natural variability is expected (inclusions of similar and/or associated soils).

The Elmira-Gefo soil formed from Pleistocene granitic glacial outwash, that typically have limited gravels in an otherwise deep, somewhat excessively drained sandy profile with relatively low soil development. In contrast, the Elmira wet variant soil has similar textures, but it is poorly to somewhat poorly drained. While the Elmira wet variant soil does not have a restricting layer, the seasonal high water table (occurring in the upper 18 to 24 inches) significantly affects the type of vegetation that can grow in seasonally wet conditions. In 2006, the soil survey was updated, which differentiated more soils and utilized digital mapping techniques. The updated soil survey indicated the likely presence of 7444-Christopher-Gefo complex, 0 to 5% slopes and 7471-Marla coarse loamy sand, 0 to 5% slopes. The Christopher soil replaced the Elmira-Gefo map unit, while the Marla series replaced the sandy and poorly drained portion of the Elmira wet variant map unit. This survey has not yet been incorporated into the TRPA Code of Ordinances and land capability program.

Land Capability Analysis For 1091 Johnson Blvd., South Lk. Tahoe (APN 027-241-031)



Geologic map (left diagram) indicates vicinity of project site consists of lacustrine terrace deposits (Qlt) and flood plain deposits (Qfp). The 1974 soil survey (right diagram) shows likely presence of Efb-Elmira-Gefo loamy coarse sand, 0 to 5% slopes and Ev-Elmira loamy coarse sand, wet variant. Efb is rated as Class 7, while Ev is rated at Class 1B. A 1991 land capability verification (LCV) determined the west portion was Efb and a 2010 LCV determined the east part included Class 3 and Class 1B parallel to the east property line.

In accordance with Land-Capability Classification of the Lake Tahoe Basin, California-Nevada (Bailey, R.G. 1974), the Efb soil is rated as Class 7, which reflects the soil has few to no limitations due to deep, dry sandy conditions occurring on a nearly flat landform. In contrast, the Ev soil is rated Class 1B, which is due to a near-surface seasonal water table that is also considered Stream Environment Zone (SEZ). The allowable base coverage for Class 7 soil is 30 percent, while Class 1B is 1 percent. A Land Capability Verification (LCV) was conducted on August 04, 2010, which determined the east part of the property was Efb; Class 3 in the east-center, and Class 1B (SEZ) along the east edge. The TRPA geomorphic group for this location is E-2 (Depositional lands: Outwash, till, and lake deposits, and E-3 (Depositional lands: Alluvial lands), which are rated as low hazard and high hazard, respectively.

Land Capability Analysis For 1091 Johnson Blvd., South Lk. Tahoe (APN 027-241-031)

Methods

The field investigation was conducted on August 27, 2020 and November 05, 2020. One soil pit was dug with a backhoe to a depth of 58 inches, while two auger holes were dug to similar depth. The soil pit was dug about 12 feet northwest of the carport/office and 25 feet south of the north property line. The first auger hole was dug in the backyard, about 35 feet east of the residence and 25 feet south of the north property line. The second auger hole was dug 36 feet northeast of the first auger hole and 10 feet south the property line. All three soil profile locations described by soil scientist Phil Scoles (Appendix A). Specifically, the profile was evaluated for soil horizons, texture, color, mottles and redoximorphic features, structure, consistence, plasticity, root size/abundance, pore size/abundance, gravels, and similar properties. Standards for these field-determined properties are promulgated by the National Cooperative Soil Survey and summarized in Field Book for Describing and Sampling Soils (NRCS, Version 3.0). Slope was measured with a clinometer and adjusted using the project topography map. Photographic documentation was completed prior to backfilling the test pits (Appendix B). Land capability delineations were transcribed from the field map to an AutoCAD drawing. This land capability map composes Appendix C.

Findings and Conclusions

The field evaluation found somewhat similar conditions in the test pit and confirmatory auger hole; namely deep, non-rocky lake terrace soils derived from granitic glacial outwash. The soils have fine sandy loam textures throughout, which makes results in moderately rapid permeability. The topsoil layer varies from 11 to 21 inches thick, and subsoil extending to greater than 55 inches below the surface. This subsoil shows no significant increase in illuviated iron nor increase in soil structure (hence only A over C horizon designations). Fine to medium roots from pine trees and shrubs (albeit few) extend below 45 inches, without any indication of restriction. The soil in the west part show indication of a seasonal high water table at 46 inches and 31 to 37 inches in the east part (lower and closer to Bijou Creek SEZ). Thus, the soils transition from well drained (west part) to moderately well drained (east part). To qualify for SEZ hydrology, the seasonal water table needs to be within 20 inches (primary indicator) or within 40 inches (secondary indicator).

The field evaluation also found that the soil surrounding the carport/office contained small layer of fill material atop the native soil. This is most apparent at a small landscape berm parallel to Johnson Boulevard. It is assumed that the fill source was the foundation and parking area for the carport/office structure. A surface duff layer was mostly absent east of the residence, since that land was converted to a lawn. Accumulated pine needles appear regularly mowed, so it does not form the typical organic horizon at the surface.

The natural soil conditions on the subject parcel do not match those soil type mapped in the 1974 soil survey or the 2010 LCV. They are also unlike the Gefo series, which is also somewhat excessively drained. In the west part, the soils have similar textures as the Efb soils, but they are not somewhat excessively drained. In the east part, they have similar topographic setting as the Ev soil, but they are not poorly to somewhat poorly drained. The soils also lack the subsurface, silica-cemented hardpan or fragipan that is central to the Jabu soil type. Given the presence of a seasonal high water at 31 to 46 inches from the surface (moderately well drained

Land Capability Analysis For 1091 Johnson Blvd., South Lk. Tahoe (APN 027-241-031)

to well drained) and textures consistent with Hydrologic Soil Group B (HSG-B), these are an unnamed soil (designated 'XXX'). In accordance with Table 4 of Land-Capability Classification of the Lake Tahoe Basin, California and Nevada, the subject soils qualify as Class 6. Specifically, the soils occur in the low hazard zone; have slopes 0 to 16%; and low to moderately low runoff potential (aka HSG-A or HSG-B). Class 6 lands have an allowable base coverage of 30 percent. Figure C-1 (Appendix C) shows site features, topographic contours, sample pit/ auger hole locations, and land capability determination.

Land Capability District, Slope Range	2010 TRPA LCV; Area (sq. ft.)	2021 Land Capability Challenge; Area (sq. ft.)	Net Change (sq. ft.)
Class 1B (Ev or SEZ, any slopes)	2,617*	0	-2,617
Class 3 (from LCV) 0-5% slopes	4,788*	0	-4,788
Class 6 (Unnamed, XXX), 0- 16% slopes		25,496	+25,496
Class 7 (EfB), 0-5% slopes	18,099*	0	-18,099
Total Parcel Area	25,504*	25,496	

* Area itemized on LCV is 8 sf. larger than area mapped by Turner & Associates topographic survey. The 2010 LCV did not itemize sq. footage for the subject parcel. Terra Science estimated the 2010 LCV sq. footage using PDF software that is calibrated to the printed map scale. Such sq. footage is presented for comparison purposes and does not represent an official TRPA finding.

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Soil, Water & Wetland Consultants


Land Capability Analysis For 1091 Johnson Blvd., South Lk. Tahoe (APN 027-241-031)

Limitations

Terra Science, Inc. examined soil conditions for the study area using one test pit on APN 027-241-031, located at 1091 Johnson Blvd., South Lake Tahoe, El Dorado County, Cal. The data presented in this analysis was collected and interpreted using standards of skill, care, and diligence ordinarily provided by a qualified soil scientist following National Cooperative Soil Survey standards and techniques. The land capability classifications followed the parameters set forth by Land-Capability Classification of the Lake Tahoe Basin, California-Nevada (Bailey, R.G., 1974) and Tahoe Regional Planning Agency Code of Ordinances (Effective Feb. 09, 2013). The analysis findings are based on incidental information from the property owner, observations of the project team and limitations of the soil investigation methods. The analysis findings and their significance should not be extrapolated beyond the study area, nor used for geotechnical, stability, or engineering purposes. Terra Science, Inc. shall not be liable beyond the fees paid for its services for errors and omissions.

The analysis was generated for the exclusive use of Mountain Meadow Retreat I, LLC, Simon Environmental Planning and their designates. These parties shall not interpret the analysis findings and/or conclusions any differently than stated without prior discussion with Terra Science, Inc.

Respectfully submitted,



Phil Scoles
Soils and Water Scientist

APPENDIX A – SOIL PROFILE DESCRIPTIONS

Soil Pit no. 1 – Located in northwest-center part of property; about 12 feet northwest of the carport/office and about 90 feet east of Johnson Blvd., and 25 feet south of north property line. Latitude: 38.942566° N, Longitude: -119.966427° W (from Google maps). Profile evaluated and recorded by Phil Scoles on 11/05/2020.

Elevation: 102 feet (local datum). Approximately 6245 feet MSL (estimated).

Landform: Lake terrace; 2% slope (aspect toward E x SE).

Vegetation: *Pinus jeffreyi* and scattered grasses. Nearby to north (vacant land): *Pinus jeffreyi*, *Pinus contorta*, *Abies concolor*, *Artemisia tridentata*, *Purshia tridentata*, *Wyethia mollis*, *Poa spp.*, and other forbs. No primary or secondary SEZ vegetation.

Oi 0 to 2.5 inches; slightly decomposed pine needles and twigs.

A1 2.5 to 12 inches; brown (10YR 4/3) very fine sandy loam, dark brown (10YR 3/3) moist; weak, fine, granular structure; soft, very friable, nonsticky and nonplastic; many, fine roots and common medium roots; many, medium interstitial pores; <1% gravel; abrupt, smooth boundary; no mottles or redoximorphic features.

A2 12 to 21 inches; brown (10Y 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; weak, medium, granular structure; soft, very friable, nonsticky and nonplastic; many, fine and medium roots, few coarse roots; many, fine interstitial pores; <1% gravel; clear, smooth boundary; no mottles or redoximorphic features.

Bw1 21 to 37 inches; yellowish brown (10YR 5/4) heavy very fine sandy loam, dark yellowish brown (10YR 3/4) moist; weak, medium, subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common, fine and medium roots, many coarse roots; many, fine interstitial pores; <1% gravel; abrupt, smooth boundary; no mottles or redoximorphic features. Somewhat dense layer, but not root restrictive.

Bw2 37 to 46 inches; light olive brown (2.5Y 5/4) heavy very fine sandy loam, olive brown (2.5Y 4/4) moist; moderate, medium, subangular blocky structure; moderately hard, firm, slightly sticky and slightly plastic; few, fine, medium and coarse roots; many, fine interstitial pores; <1% gravel; clear, smooth boundary; 2 to 3% dark yellowish brown (10YR 3/6 moist) iron redoximorphic concentrations and 2% 2.5Y 5/2 matrix depletions. Somewhat dense layer that is slightly root restrictive.

C 46 to 58+ inches; grayish brown (2.5Y 5/2) heavy very fine sandy loam, dark grayish brown (2.5Y 4/2) moist; massive structure; loose, friable, slightly sticky and slightly plastic; few, fine and medium roots; many, fine interstitial pores; <1% gravel; 5 to 7% dark yellowish brown (10YR 3/6 moist) iron redoximorphic concentrations.

[continued on following page]

TERRA SCIENCE, INC.

Soil, Water & Wetland Consultants
CCB no. 138507

Parent material:	Lake terrace formed from glacial outwash.
Drainage class:	Well drained. Rapid permeability.
Hydrologic Soil Group:	HSG-B (very fine sandy loam textures, no water or restrictions)
Soil Taxonomy:	Mixed, frigid Typic Dystrocherepts
TRPA Geomorph. Map:	E-2 (Low Hazard), Depositional lands: Outwash, till, and lake deposits.
1974 NRCS Mapping:	West part mapped Efb-Elmira-Gefo loam coarse sand, 0 to 5% slopes (qualifies as Class 7). Central and east part mapped Ev-Elmira loamy coarse sand, wet variant (qualifies as Class 1B). A 1991 and 2010 LCV determined the west and center parts as Efb, while the east part as Class 3 and Class 1B.
2006 NRCS Mapping:	West part mapped as 7441-Christopher-Gefo complex, 0 to 5% slopes (Class 7), while east part mapped as Marla coarse loamy sand, 0 to 5% slopes (Class 1B).
2021 TSI Determination:	Unnamed soil (XXX); Onsite soil differs from Efb (NRCS mapping), because it is moderately well drained, instead of somewhat excessive to well drained. Specifically, it has a seasonal high water table at 46 inches is high than allowed for well drained or somewhat excessively drained (Ev series). For the same reason, it is also unlike the Gefo series. The soil also differs from the Jabu series, because it lacks a subsurface silica-cemented layer and/or fragipan. As such, this is an unnamed soil – a transitional phase between the Efb and Ev soils. Class 6 (as per Bailey for slopes 0 to 16% and low hazard geomorphic setting).

Auger Hole 1 – Located in northeast (lower) part of property; about 35 feet east of the residence and 35 feet south of north property line, and 50 feet west of east property line. Latitude: 38.94253° N, Longitude: -119.96596° W (from Google maps). Profile evaluated and recorded by Phil Scoles on 8/27/2020. NOTE: Some properties not described, since hand auger crushes too much of the soil material.

Elevation: 98 feet (local datum). Approximately 6243 feet MSL (estimated).
Landform: Lake terrace; 2% slope (aspect toward E x SE).
Vegetation: *Pinus contora* with a few *Pinus jeffreyi*. Understory contains *Purshia tridentata*, *Vicia spp.*, *Poa spp.*, *Festuca idahoensis*, *Lathyrus spp.* and *Aster occidentalis*. Plant community lacks sufficient species to qualify as primary or secondary SEZ vegetation.

A1 0 to 4 inches; dark grayish brown (10YR 4/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist, sandy loam; weak, granular structure; soft, very friable, nonsticky and nonplastic; many, fine roots; <1% gravel; abrupt boundary; no redoximorphic features.

A2 4 to 13 inches; brown (10YR 4/3) fine sandy loam, dark brown (10YR 3/3) moist, sandy loam; moderate, granular structure; slightly hard, friable, nonsticky and nonplastic; many, fine and medium roots; <1% gravel; clear boundary; no redoximorphic features.

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- AC 13 to 27 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist, sandy loam; moderate, granular structure; slightly hard, friable, nonsticky and nonplastic; many, fine and medium roots, few coarse roots; <1% gravel; clear boundary; no redoximorphic features.
- C1 27 to 37 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist, sandy loam; single grain; soft, very friable, nonsticky and nonplastic; common, fine and medium roots, few coarse roots; <1% gravel; clear boundary; 1% dark brown (7.5YR 3/4 moist) iron soft masses (redoximorphic features) in matrix.
- C2 37 to 48+ inches; brown (10YR 4/3) fine sandy loam, dark brown (10YR 3/3) moist, sandy loam; massive; soft, very friable, nonsticky and nonplastic; common, fine and medium roots, few coarse roots; <1% gravel; clear boundary; 5 to 10% brown (7.5YR 4/4 moist) iron soft masses (redoximorphic features) in matrix.
- C3 48 to 58+ inches; light olive brown (2.5Y 5/4) fine sandy loam, olive brown (2.5Y 4/4) moist, sandy loam; massive; soft, very friable, nonsticky and nonplastic; common, fine and medium roots, few coarse roots; <1% gravel; clear boundary; 10 to 15% strong brown (7.5YR 4/6 moist) iron soft masses (redoximorphic features) in matrix, 15% dark grayish brown (2.5Y 4/2 moist) depletions.

Parent material: Lake terrace formed from glacial outwash.
Drainage class: Moderately well drained. Moderately rapid permeability.
Hydrologic Soil Group: HSG-B (sandy loam textures, no water or restrictions)
Soil Taxonomy: Mixed, frigid Typic Dystrocherepts

TRPA Geomorph. Map: E-3 (High Hazard), Depositional lands: Alluvial lands.
1974 NRCS Mapping: Ev-Elmira loamy coarse sand, wet variant (qualifies as Class 1B).
2010 LCV determined this vicinity as Class 3.
2006 NRCS Mapping: Marla coarse loamy sand, 0 to 5% slopes (Class 1B).
2021 TSI Determination: Unnamed soil (XXX); Onsite soil differs from Ev (NRCS mapping), because it is moderately well drained, instead of poorly to somewhat poorly drained. Specifically, it has a seasonal high water table at 37 inches is too deep for somewhat poorly drained (Ev series). It is also unlike the EfB and Gefo series (mapped nearby) since those soils are well drained to somewhat excessively drained. As such, this is an unnamed soil – a transitional phase between the EfB and Ev soils. Class 6 (as per Bailey for slopes 0 to 16% and low hazard geomorphic setting).

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Auger Hole 2 – Located in northeast (lower) part of property; about 70 feet east of the residence and 10 feet south of north property line, and 20 feet west of east property line. Latitude: 38.942511° N, Longitude: -119.965792° W (from Google maps). Profile evaluated and recorded by Phil Scoles on 8/27/2020. NOTE: Some properties not described, since hand auger crushes too much of the soil material.

Elevation: 97 feet (local datum). Approximately 6242 feet MSL (estimated).

Landform: Lake terrace; 2% slope (aspect toward E x SE).

Vegetation: *Pinus contora* with a few *Pinus jeffreyi*. Understory contains *Purshia tridentata*, *Poa spp.*, *Festuca idahoensis*, *Melilotus spp.* and *Aster occidentalis*. Plant community lacks sufficient species to qualify as primary or secondary SEZ vegetation.

A1 0 to 3.5 inches; dark grayish brown (10YR 4/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist, sandy loam; weak, granular structure; soft, very friable, nonsticky and nonplastic; many, fine roots; <1% gravel; abrupt boundary; no redoximorphic features.

A2 3.5 to 11 inches; brown (10YR 4/3) fine sandy loam, dark brown (10YR 3/3) moist, fine sandy loam; weak, granular structure; slightly hard, friable, nonsticky and nonplastic; many, fine and medium roots; <1% gravel; clear boundary; no redoximorphic features.

AC 11 to 31 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist, fine sandy loam; moderate, granular structure; slightly hard, friable, nonsticky and nonplastic; many, fine and medium roots, few coarse roots; <1% gravel; clear boundary; no redoximorphic features.

C1 31 to 41 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist, fine sandy loam; single grain; soft, very friable, nonsticky and nonplastic; common, fine and medium roots, few coarse roots; <1% gravel; clear boundary; 5% brown (7.5YR 4/4 moist) iron soft masses (redoximorphic features) in matrix.

C2 41 to 49 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist, fine sandy loam; massive; soft, very friable, nonsticky and nonplastic; common, fine and medium roots, few coarse roots; <1% gravel; clear boundary; 10 to 15% strong brown (7.5YR 4/6 moist) iron soft masses (redoximorphic features) in matrix.

C3 49 to 58+ inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist, fine sandy loam; massive; soft, very friable, nonsticky and nonplastic; few to common, fine and medium roots; <1% gravel; 20% strong brown (7.5YR 4/6 moist) iron soft masses (redoximorphic features) in matrix, 10% dark grayish brown (10YR 6/3 moist) depletions.

Parent material: Lake terrace formed from glacial outwash.

Drainage class: Moderately well drained. Moderately rapid permeability.

Hydrologic Soil Group: HSG-B (sandy loam textures, no water or restrictions)

Soil Taxonomy: Mixed, frigid Typic Dystrocherepts

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TRPA Geomorph. Map:	E-3 (High Hazard), Depositional lands: Alluvial lands.
1974 NRCS Mapping:	Ev-Elmira loamy coarse sand, wet variant (qualifies as Class 1B). 2010 LCV determined this vicinity as Class 1B (SEZ).
2006 NRCS Mapping:	Marla coarse loamy sand, 0 to 5% slopes (Class 1B).
2021 TSI Determination:	Unnamed soil (XXX); Onsite soil differs from Ev (NRCS mapping), because it is moderately well drained, instead of poorly to somewhat poorly drained. Specifically, it has a seasonal high water table at 31 inches is too deep for somewhat poorly drained (Ev series). Further, this location lacks 1 primary SEZ indicator and/or 3 secondary SEZ indicators; thus it cannot be grouped with Class 1B soil. It is also unlike the EfB and Gefo series (mapped nearby) since those soils are well drained to somewhat excessively drained. As such, the soil is an unnamed variant of the EfB. Class 6 (as per Bailey for slopes 0 to 16% and low hazard geomorphic setting).

APPENDIX B – PROJECT PHOTOGRAPHS



Photo 1. Soil Pit 1
(Depth = 58 in.)



Photo 2. View east at vicinity of Soil Pit 1. 2% slope and E x SE aspect. Lake terrace landform composed of granitic outwash.



Photo 3. View southwest to west (right) at Soil Pit 1. Carport/office at left. This portion of the parcel has a thin veneer of fill material, 2 to 6 inches thick (presumably placed during prior construction).

APPENDIX B – PROJECT PHOTOGRAPHS (cont'd).



Photo 4. Auger Hole 1
(Depth = 58 in.)



Photo 5. View north at vicinity of Auger Hole 1. 2% slope and E x SE aspect. No indication of fill material.



Photo 6A. Soil matrix at 32 in. with 1% Fe redox features.



Photo 6B. Soil matrix at 37 in. with 5 to 10% Fe redox features.



Photo 6C. Soil matrix at 52 in. with 10 to 15% Fe redox features

APPENDIX B – PROJECT PHOTOGRAPHS (cont'd).



Photo 7. View east to southeast (right) at Auger Hole 1. A 2010 LCV determined the foreground area as Class 3 and background area (by fence) as Class 1B. This analysis found it qualifies as Class 6.



Photo 8. View west to northwest (right) at Auger Hole 2. Residence in background. Adjacent vegetation of Jeffrey pine, bitterbrush and Idaho fescue indicate non-SEZ conditions for east edge.

APPENDIX B – PROJECT PHOTOGRAPHS (cont'd).



Photo 9. Auger Hole 2
(Depth = 58 in.)



Photo 10. View north at vicinity of Auger Hole 2. The subject parcel is adjacent to Bijou Golf Course (to the east).



Photo 11A. Soil matrix at 31 in.
with 5% Fe redox features



Photo 11B. Soil matrix at 41 in.
with 10 to 15% Fe redox features.



Photo 11C. Soil matrix at 54 in.
with 20% Fe redox features.

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Photo 10. View northwest to north (right) at parcel backyard. Lawn of bluegrass with lesser amounts of sweet clover, lupine and aster. Lodgepole pine in foreground, Jeffrey pine in background.



Photo 11. View north to northeast (right) at residence and backyard. This analysis found that the soil is moderately well (right) to well drained (left), which qualifies as Class 6.

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APPENDIX C – LAND CAPABILITY MAP

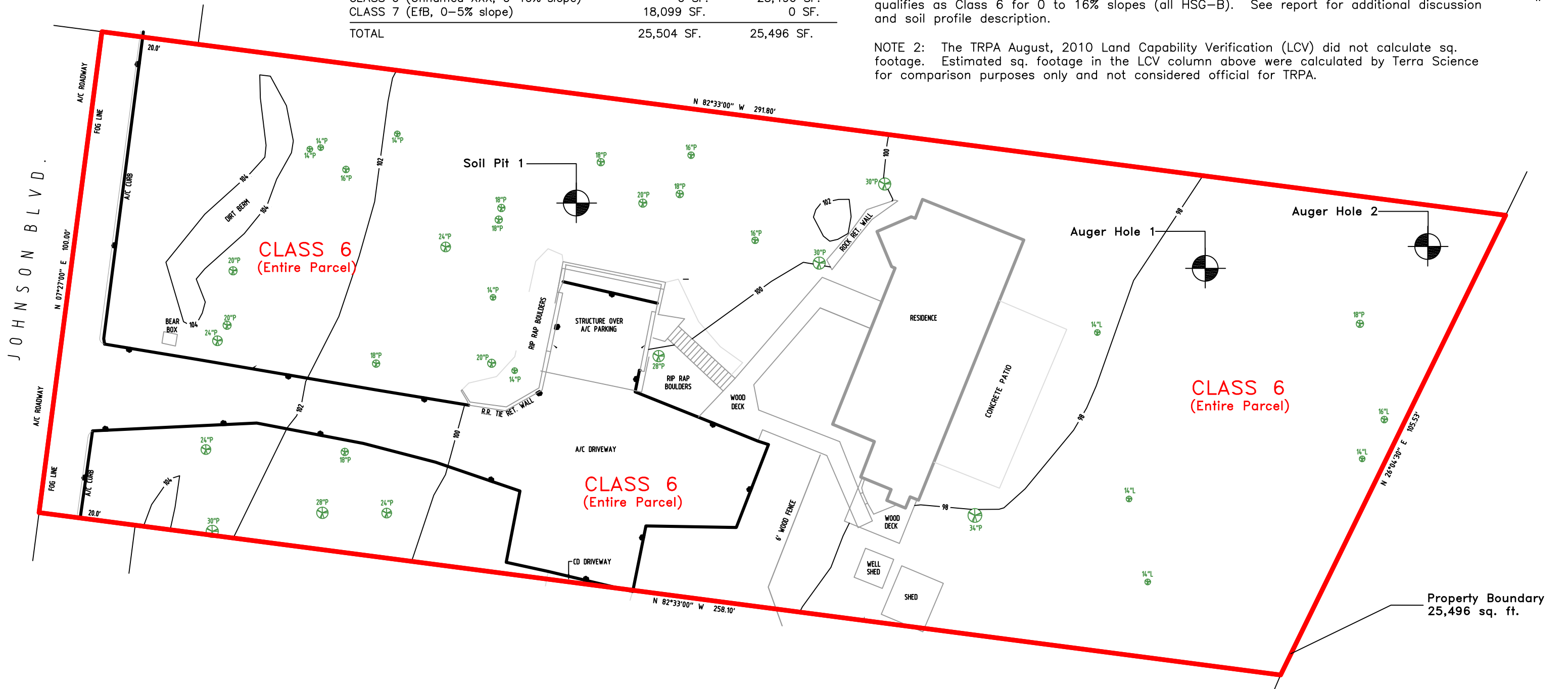
LAND CAPABILITY FINDINGS -- See Notes

LOT AREA = 25,496 S.F. (0.59-AC.)

LAND CAPABILITY CATEGORY	AUG. 2010 LCV (ESTIMATED)	FEB. 2021 LCC (TERRA SCI.)
CLASS 1B (EV or SEZ, any slope)	2,617 SF.	0 SF.
CLASS 3 (from LCV, 0-5% slope)	4,788 SF.	0 SF.
CLASS 6 (Unnamed XXX, 0-16% slope)	0 SF.	25,496 SF.
CLASS 7 (Efb, 0-5% slope)	18,099 SF.	0 SF.
TOTAL	25,504 SF.	25,496 SF.

NOTE 1: Land Capability Analysis conducted by soil scientist, Phil Scoles on August 27 and November 05, 2020. The onsite soil has fine sandy loam textures throughout (lake terrace deposit from glacial outwash). Soil conditions for the subject property are similar to the mapped Efb soil (1974 soil survey), except the soil has a seasonal high water table 31 to 46 inches from the surface. Such wetness is apparent by >5% Fe redox soft masses in the matrix, which indicates the soil is moderately well to well drained. The central concept of the Efb soil does not include well drained and moderately well drained. As such, the onsite soil is unnamed (designated as XXX). In accordance with Table 4 of the Land-Capability of Lake Tahoe Basin, California-Nevada (Bailey, R.G.), this unnamed soil qualifies as Class 6 for 0 to 16% slopes (all HSG-B). See report for additional discussion and soil profile description.

NOTE 2: The TRPA August, 2010 Land Capability Verification (LCV) did not calculate sq. footage. Estimated sq. footage in the LCV column above were calculated by Terra Science for comparison purposes only and not considered official for TRPA.



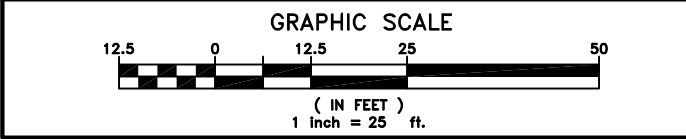
Property Boundary
25,496 sq. ft.

SOURCE: Adapted from Turner & Associates, Inc. Land Surveying topographic survey, December, 2020.

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LAND CAPABILITY ANALYSIS FOR
ROBERT MCINTYRE PARCEL
1091 Johnson Boulevard
South Lake Tahoe, El Dorado County, Calif.
APN: 027-241-031

EXISTING CONDITIONS AND
LAND CAPABILITY CLASSES



February 2021

AGENDA ITEM NO. V. A

FIGURE
C-1

Attachment C

Photographs

APPENDIX B – PROJECT PHOTOGRAPHS (cont'd).



Photo 4. Auger Hole 1
(Depth = 58 in.)



Photo 5. View north at vicinity of Auger Hole 1. 2% slope and E x SE aspect. No indication of fill material.



Photo 6A. Soil matrix at 32 in. with 1% Fe redox features.



Photo 6B. Soil matrix at 37 in. with 5 to 10% Fe redox features.



Photo 6C. Soil matrix at 52 in. with 10 to 15% Fe redox features

APPENDIX B – PROJECT PHOTOGRAPHS (cont'd).



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Photo 8. View west to northwest (right) at Auger Hole 2. Residence in background. Adjacent vegetation of Jeffrey pine, bitterbrush and Idaho fescue indicate non-SEZ conditions for east edge.

APPENDIX B – PROJECT PHOTOGRAPHS (cont'd).



Photo 9. Auger Hole 2
(Depth = 58 in.)



Photo 10. View north at vicinity of Auger Hole 2. The subject parcel is adjacent to Bijou Golf Course (to the east).



Photo 11A. Soil matrix at 31 in.
with 5% Fe redox features



Photo 11B. Soil matrix at 41 in.
with 10 to 15% Fe redox features.



Photo 11C. Soil matrix at 54 in.
with 20% Fe redox features.

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Photo 10. View northwest to north (right) at parcel backyard. Lawn of bluegrass with lesser amounts of sweet clover, lupine and aster. Lodgepole pine in foreground, Jeffrey pine in background.



Photo 11. View north to northeast (right) at residence and backyard. This analysis found that the soil is moderately well (right) to well drained (left), which qualifies as Class 6.