
MEMORANDUM

Date: August 24, 2023

To: TRPA Hearings Officer

From: TRPA Staff

Subject: R&R Edgewater LLC Land Capability Challenge
3395 Edgewater Drive, Placer County, California
APN: 093-082-007, TRPA File No.: LCAP2023-0037

Proposed Action:

Hearings Officer review and approve the proposed Land Capability Challenge.

Staff Recommendation:

Staff recommends the TRPA Hearings Officer approve the land capability challenge on the subject parcel. The challenge would change the land capability of Class 3 (100% of parcel) to Class 4 (100% of parcel). This change is itemized on the table on Page 3 and depicted on a map included in Attachment C.

Background:

The subject 0.23-acre parcel is shown as Class 3 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) identifies the subject parcel as Umpa very stony sandy loam (UmE), 15 to 30 percent slopes. Umpa soils formed from andesite colluvium and residuum, and has a very stony sandy loam surface layer. The Umpa subsoil has a gravelly sandy loam texture to a depth of 20 to 40 inches, then fractured andesite is present below. The 2006 soil survey update indicates this parcel is likely Jorge very cobbly fine sandy loam, 15 to 30 percent slopes (map unit 7152). The Jorge soil type consists of colluvium over andesitic residuum, which has a gravelly to very gravelly sandy loam in the upper part. Jorge soils are older soils, so they have clay accumulation in the subsoil (argillic horizon), as well as some iron enrichment. Underlying bedrock may be present in the upper 50 inches, but could be below 60 inches, too. The vicinity of the parcel has a geomorphic mapping of D-2 for Streamcut Volcanic Flowlands: Headlands (moderate hazard lands).

The Tahoe Regional Planning Agency (TRPA) land capability map shows the entire parcel as Class 3 (low capability rating). The subject parcel does not have a land capability verification (LCV); however, an LCV is not a prerequisite for a land capability challenge. A TRPA land capability challenge (LCAP2023-0037) was filed by the property owner and their representative Ogilvy Consulting on February 06, 2023. On July 25, 2023, Sid Davis and Denny Churchill (Davis2 Consulting Earth Scientists) conducted a site visit to document site conditions and describe the soil profile for a single hand-dug pit located in the northeast part of the parcel. The residence backyard has several created terraces and rock revetments, but the pit location appears

undisturbed and representative of the parcel. The TRPA contractor examined the soil profile for soil texture, ped structures; soil horizon depths; root distribution; depth to bedrock, and conducted a walking tour of the remaining portion of the property. The TRPA contractor agreed with the Davis2 Consulting Earth Scientist's soil descriptions (Attachment D) and land capability conclusions.

Findings:

The subject parcel consists of a south sloping hillside formed from andesite and colluvial materials deposited atop weathered bedrock. The land surface has natural 16 to 20% slopes (dips to south), which is consistent with soil survey slope class of 15 to 30%. The parcel has over-steepened slopes adjacent to Dardanelles Avenue to the north and Edgewater Drive to the south. For land capability matters, TRPA utilizes the historic (natural) slopes, which are estimated using the site topography survey. The parcel contains a two-story house positioned in the center part and landscaping in the north part. The south part is densely vegetated with shrubs. Surface boulders occur throughout the property (5 to 15% cover) – some have been placed for landscaping or exposed during prior construction. Such boulders (when exposed by excavation) are evident as “floaters” and not connected to bedrock. The vegetation consists of upland trees (Jeffrey pine, white fir, aspen), and shrubs (huckleberry oak, greenleaf manzanita, wild currant), plus a few scattered forbs.

This land capability challenge utilized a single, hand-dug test pit, located about 15 feet northeast of the residence, 12 feet west of the east property line, and 35 feet south of the north property line. The parent material is a volcanic debris flow (colluvium) that that has been reworked by ancient wave action (when Lake water levels were impounded and significantly higher than current high-water line). Due to increasing boulder size, the pit digging was stopped at 44 inches (sufficient depth for land capability evaluation). Observed soil textures are stony loamy sand at the surface, and very bouldery sandy loam and sandy clay loam in the subsoil. This argillic (Bt) horizon indicates moderate degree of soil formation, where microscopic clays have accumulated in the subsoil (a common characteristic of the Jorge-Tahoma soil types, for example). This subsoil has also developed a moderate subangular blocky structure with many medium roots and common coarse roots to a depth of 44 inches. The observed soil is well drained and has a hydrologic soil group rating of HSG-B. No indication of seasonal ground water within the soil profile.

The observed soils are unlike the mapped Umpa series (which has a shallow depth to bedrock). It is also unlike the rocky Tallac series that has a silica-cemented layer in the subsoil. It is similar to the Jorge-Tahoma soils, except the subsoil rocks at this location indicate the original parent material (lahar and associated colluvium) was reworked by ancient wave action. In prehistoric times, Lake Tahoe was impounded by glacial ice dams and/or volcanic flows that raised water levels significantly and created shorelines. Thus, the subsoil rocks are smooth and rounded by centuries of wave water movement. In contrast, Jorge-Tahoma soils have angular rocks due to colluvial movement (gravity influence movement). The observed soil is an unnamed inclusion, rather than the Jorge series described in the 1974 Soil Survey of the Lake Tahoe Basin. In accordance with Table 4 of Land-Capability Classification of the Lake Tahoe Basin, California-Nevada (R.G. Bailey, 1974), the land capability rating for the observed soil is Class 4 for slopes 16

to 30% (unnamed, XXX). The table on the following page summarizes the soil types, slope classes, as well as changes in land capability concluded by this land capability challenge.

Land Capability District	Slope Class (Range)	TRPA Land Capability Map Area (sq. ft.)	2023 Land Cap. Challenge Area (sq. ft.)	Net Change Total Area (sq. ft.)
Class 3 (Umpa, UmE)	15 to 30%	10,182	0	-10,182
Class 4 (Unnamed, XXX)	16 to 30%	0	10,182	+10,182
Total Parcel Area		10,182	10,182	

This memorandum was jointly prepared by TRPA contractor Phil Scoles (Terra Science, Inc.) and TRPA Senior Planner, Julie Roll. If you have questions on this Hearings Officer item, please contact Julie Roll at 775-589-5247 (jroll@trpa.gov).

Attachments:

- A. Vicinity Map and TRPA Land Capability Map
- B. Site Photographs (July 25, 2023)
- C. August 2023 Land Capability Challenge Recommendation Map
- D. Soil Consultant’s Land Capability Report, incl. Soil Descriptions (1 test pit)

BAILEY LAND CAPABILITY CHALLENGE FINDINGS

Site Information	
Assessor's Parcel No. (APN):	093-082-007
TRPA File No. / Submittal Date:	LCAP2023-0037 / February 06, 2023
Owner or Applicant:	R&R Edgewater LLC, owner; 1390 N. McDowell Blvd., Ste. G, no. 177; Petaluma, CA 94954; Ogilvy Consulting, Land Use & Development Strategies (Representative); Post Office Box 6315; Tahoe City, CA 96145.
Site Address:	3395 Edgewater Drive, Tahoe City (Dollar Point); Placer County, CA.; T. 16N, R. 17E, SW/ 4 of SE1/4 of Sec. 33.

Environmental Setting	
Bailey Soil Mapping Unit / Hydrologic Soil Group (HSG) / Land Class / Geomorphic Hazard Unit	Umpa very stony sandy loam, 15 to 30% slopes (UmE, HSG-C) / D-2 Volcanic Flowlands: Headlands (moderate hazard lands as per 1974 Bailey Land Capability Report)
Landform and Soil Parent Material	Colluvium over residuum; ancient shoreline.
Slopes and Aspect	16 to 20% slopes (south aspect), excludes road slopes.
Elevation and Datum	6282 to 6317 feet (Lake Tahoe datum); Tieslau Civil Engineer topo. survey (Mar. 31, 2022)
Rock Outcrops and Surface Configuration	No outcrops, 5 to 15% surface stones and boulders ("floaters", not connected to bedrock).
SEZ Mapping / NRCS Hydric Soil	None
Vegetation	Jeffrey pine, white fir, aspen, saplings, huckleberry oak, greenleaf manzanita, wild currant, and forbs.
Ground Cover Condition	Good (vegetation 50 to 90%, duff 30 to 40%)
Site Features	Residence, asphalt driveway, decks, retaining wall, stone steps, and landscaping.

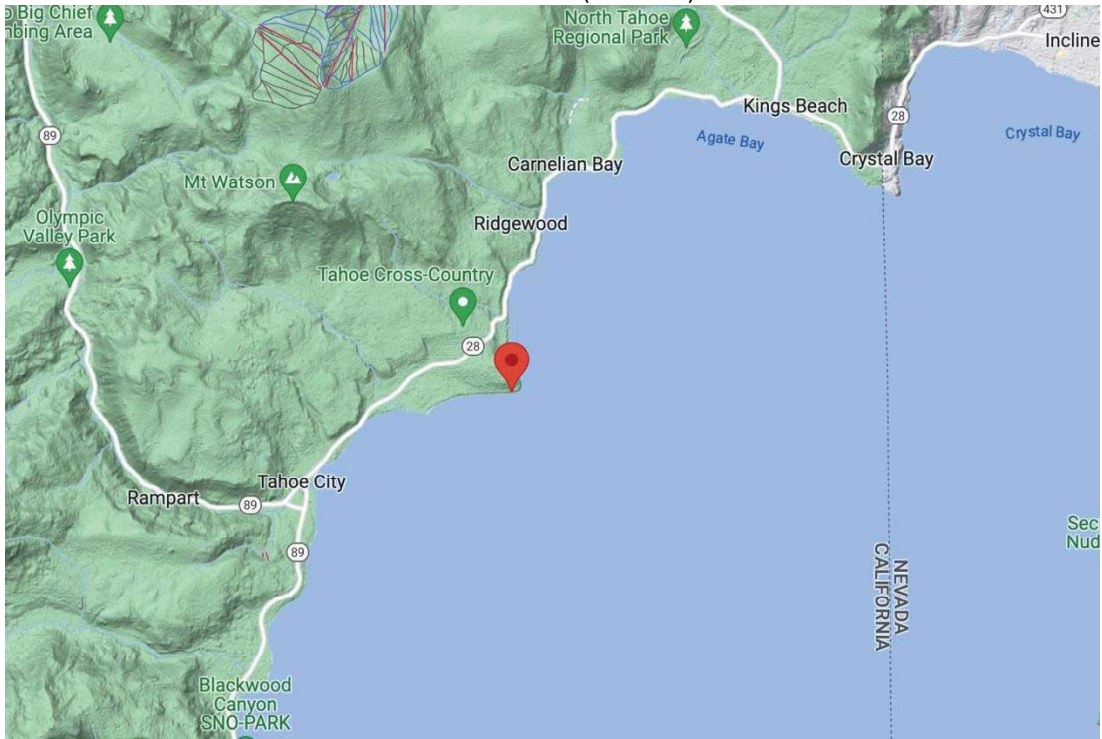
Field Investigation and Procedures	
Consultant and Address	Sidney Davis, Davis2 Consulting Earth Scientists; Post Office Box 734; Georgetown, CA; Phone (530) 599-1405; davis2consulting@sbcglobal.net
Consultant Field Date	July 25, 2023. One soil pit dug to 44 inches.
TRPA Contractor and Address	Phil Scoles (TRPA subcontractor) Post Office Box 2100; Portland, OR 97208-2100
TRPA Contractor Field Dates and Additional TRPA Sample Locations	On July 25, 2023, TRPA contractor Phil Scoles examined the same soil pit and found similar findings to consultant's soil description. Soils are similar to nearby land capability challenges approved for this vicinity.
Areas Not Examined	Residence, driveway, deck and retaining wall.

TRPA Findings	
2006 Soil Survey Map Unit¹	Jorge very cobbly fine sandy loam (Loamy-skeletal, isotic, frigid Andic Haploxeralfs), 15 to 30 percent slopes (map unit 7152). Class 4, HSG-B.
Contractor Soil Mapping Determination and Rationale	The soil is much deeper than the mapped Umpa series and unlike the rocky Tallac series. The upper soil layers contain colluvial materials (eroded from higher ground), while the lower layers are wave-influence andesitic parent materials. Compared to the loamy sand topsoil, the subsoil has formed a more clayey (argillic) layer within wave-washed sand, gravel and boulders. It is well drained (HSG-B). While clay accumulation in the subsoil is a common characteristic of the Jorge-Tahoma soils, the wave-influenced parent material is not within the mapping concept. As such, this soil is an unnamed inclusion (designated as XXX, 16 to 30% slopes). See staff report and soil consultant's profile descriptions.
Slope Determination	16 to 20%. Land immediately adjacent to Dardenalles Avenue and Edgewater Drive is artificially steepened by original street construction (circa 1970). Estimated natural contours utilized for evaluation. See land capability map based upon Mar. 2022 Tieslau Civil Engineering, Inc. topographic map.
TRPA Conclusion(s)	Soil does not match 1974 soil survey (Umpa very stony sandy loam, 15 to 30% slopes, UmE) or 2006 soil survey (Jorge, very cobbly fine sandy loam, 15 to 30% slopes). The land capability rating for the unnamed soil (XXX) is Class 4 for 16 to 30% slopes.
Applicable Area	Entire site (see map, Attachment C, August, 2023).

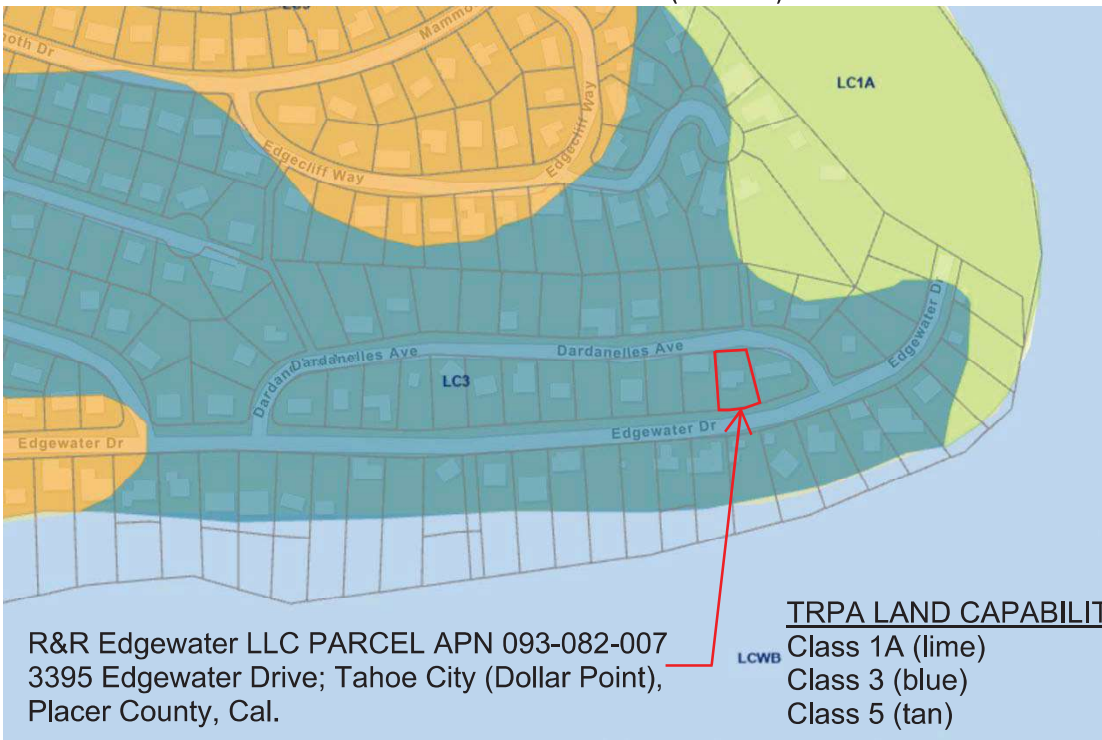
¹ TRPA currently relies upon the Soil Survey of Tahoe Basin, California-Nevada (Rogers and Soil Conservation Service, 1974), which the Bailey Land Capability system is predicated upon. The 2006 soil survey update has not yet been formally adopted by TRPA for use with land capability matters.

Attachment A
Vicinity Map and TRPA Land Capability Map

VICINITY MAP (no scale)



TRPA LAND CAPABILITY MAP (no scale)



R&R Edgewater LLC PARCEL APN 093-082-007
3395 Edgewater Drive; Tahoe City (Dollar Point),
Placer County, Cal.

TRPA LAND CAPABILITY
Class 1A (lime)
Class 3 (blue)
Class 5 (tan)

Attachment B
Site Photographs (July 25, 2023)



Mail

PO Box 5310
Stateline, NV 89449-5310

Location

128 Market Street
Stateline, NV 89449

Contact

Phone: 775-588-4547
Fax: 775-588-4527
www.trpa.gov

3395 Edgewater Drive, Tahoe City (Dollar Pt.), Cal. (R&R Edgewater LLC Parcel; APN: 093-082-007)



Photo 1 – View upslope (north) at south side of property. Dominant vegetation is Jeffrey pine, white fir, aspen, greenleaf manzanita and huckleberry oak. Small area in foreground is over-steepened from street construction (circa 1970).

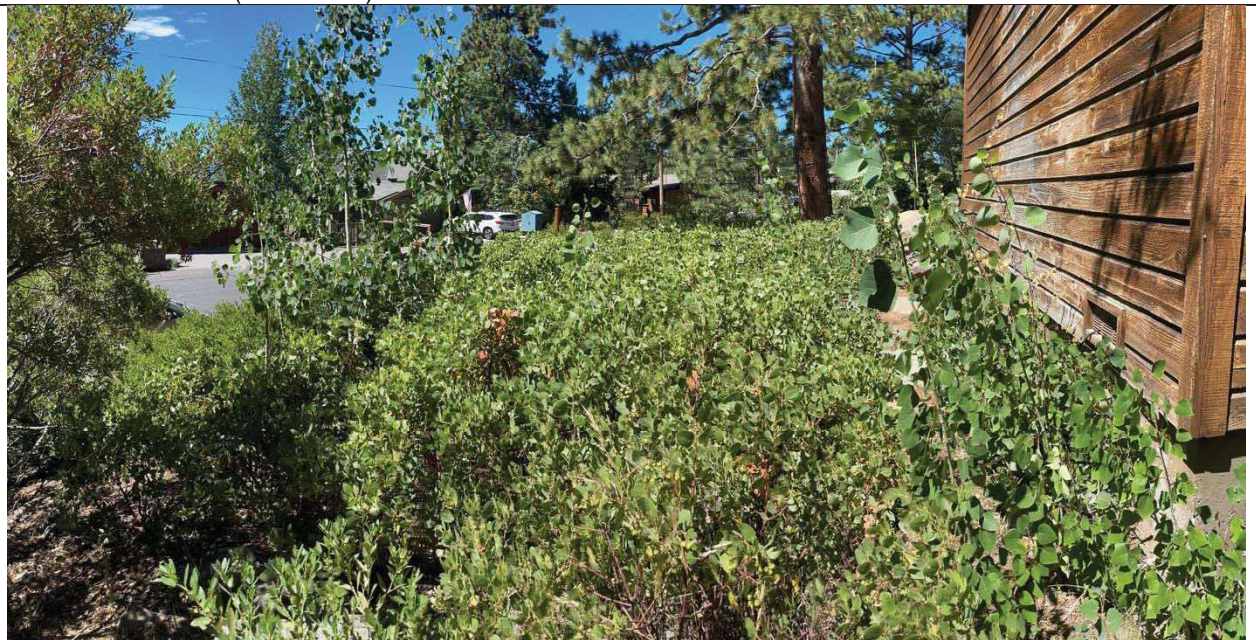


Photo 2 – View southwest at south portion of property, which supports mostly greenleaf manzanita and huckleberry oak, plus a few planted aspen. Natural slopes in this vicinity are 16 to 18% (south aspect).



Photo 3 – View to east at upper (north) part of property. The backyard has several created terraces separated by rock retaining walls. At upper left, rock armored surface atop 40 to 55% slopes that were over-steepened when adjacent Dardanelles Avenue was constructed (circa 1970). For land capability matters, TRPA utilizes natural (historic) slopes, which are estimated at 20% for this vicinity.



Photo 4 – View to east edge of parcel where sample site 7/25/23-1 was hand-excavated about 15 feet northeast of residence (just east of small deck, behind dirt pile). Slopes are 20% in this vicinity. The test pit showed the property has deep soils that become increasingly rocky with depth.

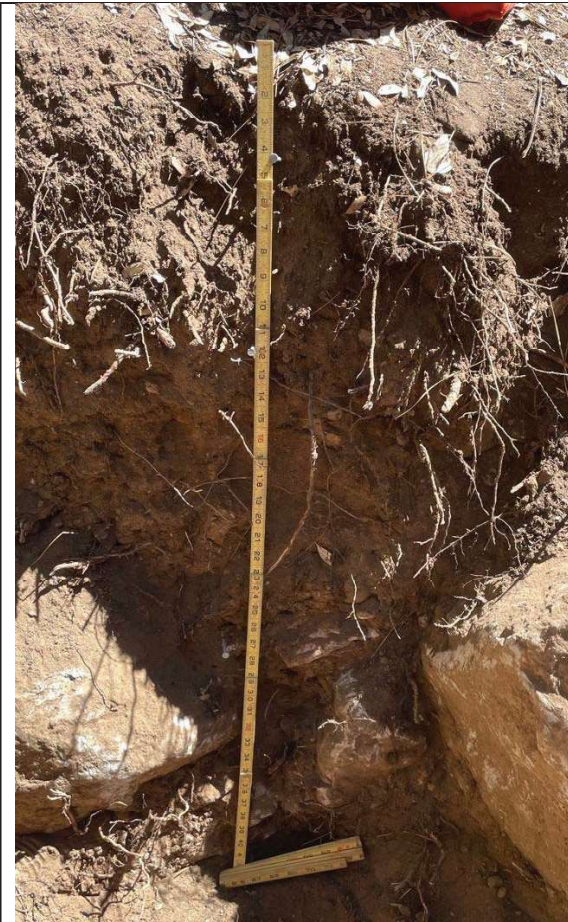


Photo 5 – Close-up view of sample site 7/25/23-1 showing surface layer with many fine and medium roots. Subsoil layers had increasing rockiness, but still contained many medium roots and common coarse roots. Note rounded shape of boulders, which attained their smooth condition when ancient lake levels occurs at this elevation and wave-washed the rocks. While similar to the Jorge-Tahoma soil types, the wave-influenced subsoil makes it an unnamed inclusion (XXX). For slopes 16 to 30%, this soil rates as Class 4 as per Table 4 of the land capability system.

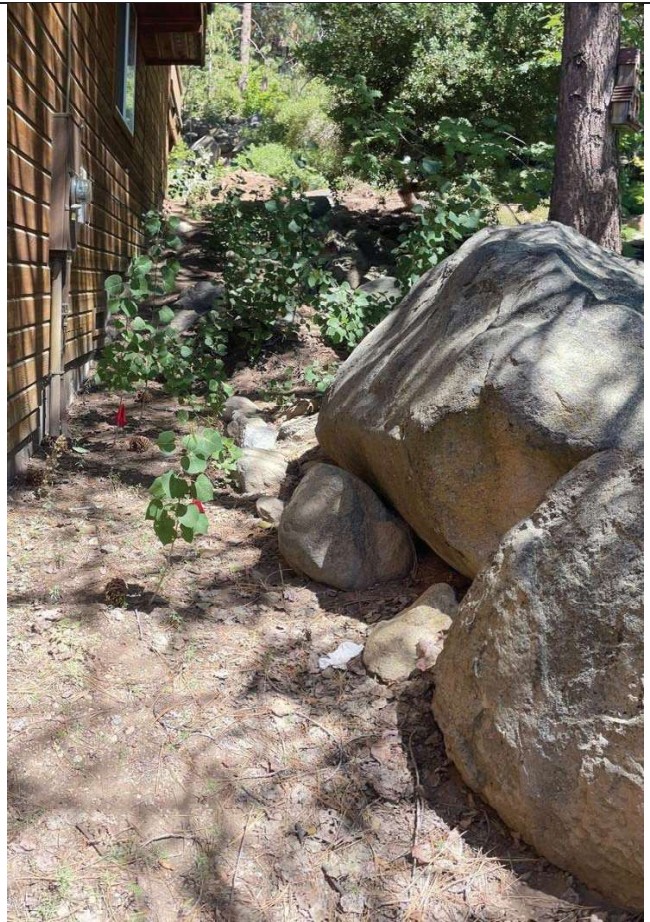
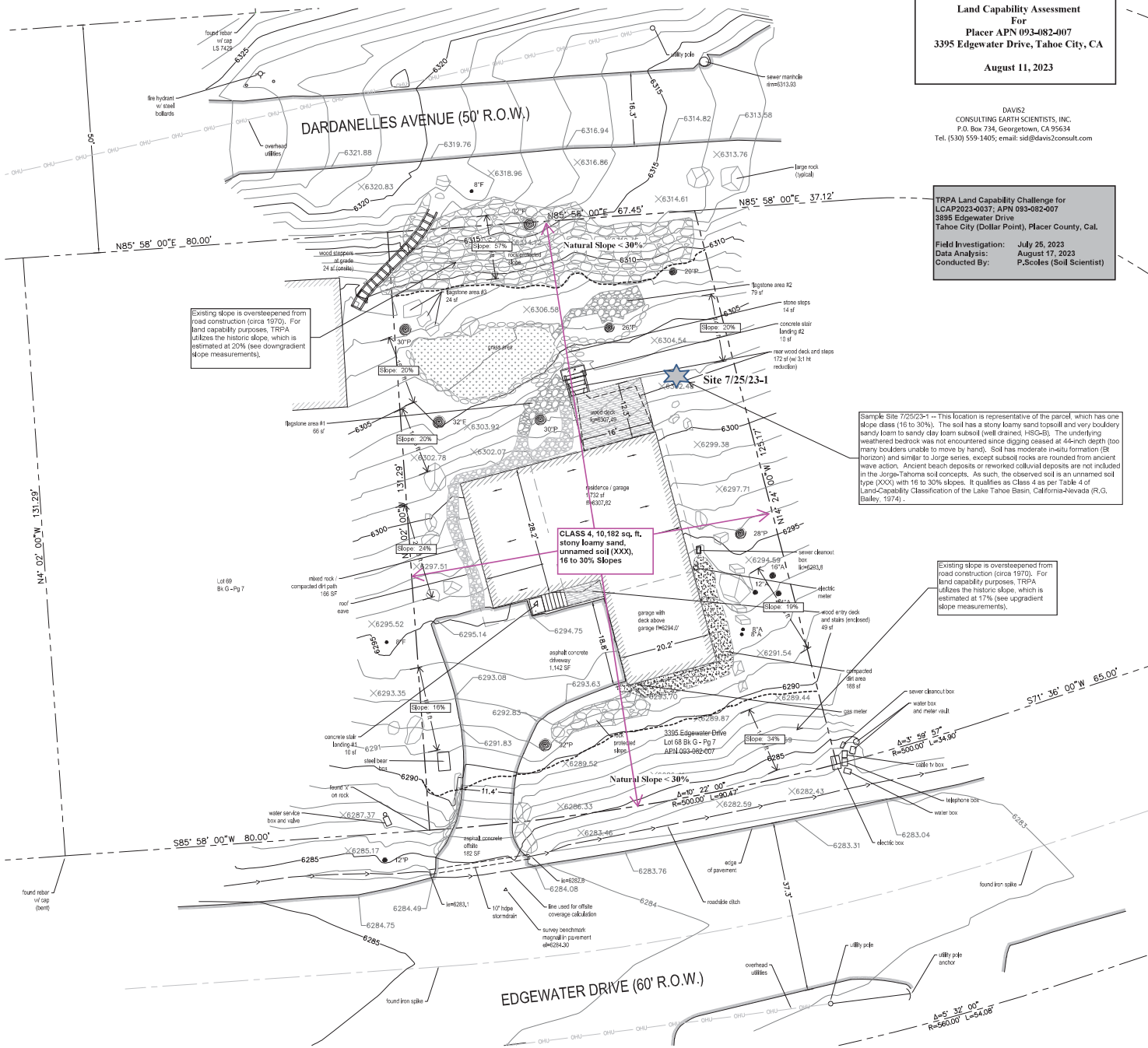


Photo 6 – View north along east side of residence. Soil pit in upper-center of photo (right of residence, above aspen saplings). The slope in this vicinity is ranges from 17 to 20%. Boulders in foreground presumably excavated when residence was constructed. Boulders of similar size (or smaller) prevented hand-digging of soil pit deeper than 44 inches – still sufficient depth of land capability evaluation.

Attachment C
August 2023 Land Capability Challenge Recommendation Map



**Land Capability Assessment
For
Placer APN 093-082-007
3395 Edgewater Drive, Tahoe City, CA
August 11, 2023**

DAVIS2
CONSULTING EARTH SCIENTISTS, INC.
P.O. Box 734, Georgetown, CA 95634
Tel. (530) 559-1405; email: sid@davis2consult.com

**TRPA Land Capability Challenge for
LCAP2023-0037; APN 093-082-007
3895 Edgewater Drive
Tahoe City (Dollar Point), Placer County, Cal.**
Field Investigation: July 25, 2023
Data Analysis: August 17, 2023
Conducted By: P.Scoles (Soil Scientist)

Existing slope is overstepped from road construction (circa 1970). For land capability purposes, TRPA utilizes the historic slope, which is estimated at 20% (see downgradient slope measurements).

Sample Site 7/25/23-1 -- This location is representative of the parcel, which has one slope class (16 to 30%). The soil has a stony loamy sand topsoil and very bouldery sandy loam to sandy clay loam subsoil (well drained, HSC4-B). The underlying weathered bedrock was not encountered since digging ceased at 44-inch depth (too many boulders unable to move by hand). Soil has moderate in-situ formation (Bk horizon) and similar to Jolge series, except subsoil rocks are rounded from ancient wave action. Ancient beach deposits or reworked colluvial deposits are not included in the Jolge-Tahoma soil concepts. As such, the observed soil is an unnamed soil type (XXX) with 16 to 30% slopes. It qualifies as Class 4 as per Table 4 of Land-Capability Classification of the Lake Tahoe Basin, California-Nevada (R.G. Bailey, 1974).

Existing slope is overstepped from road construction (circa 1970). For land capability purposes, TRPA utilizes the historic slope, which is estimated at 17% (see upgradient slope measurements).

LEGEND

- PROPERTY LINE
- - - ADJACENT PROPERTY LINE
- 30°P EXISTING TREE AS NOTED
- 100' EXISTING CONTOURS (1' & 5')
- EDGE OF PAVEMENT
- CONCRETE
- ROCK BORDER

BASIS OF BEARINGS
BEARINGS SHOWN HEREON ARE BASED ON THE SUBDIVISION MAP OF DOLLAR POINT UNIT #2, BOOK G, MAPS, PAGE 7, PLACER COUNTY RECORDS.

BENCHMARK DATUM
ELEVATIONS SHOWN HEREON ARE BASED ON LAKE TAHOE DATUM, HIGH WATER ELEVATION 6226.1.

LEGAL DESCRIPTION:
LOT 68, DOLLAR POINT No. 2, FILED IN BOOK G, MAPS, PAGE 7, PLACER COUNTY RECORDS.

OWNER:
R & R EDGEWATER LLC
1390 N MCDOWELL BLVD STE G #177
PETALUMA, CA 94954

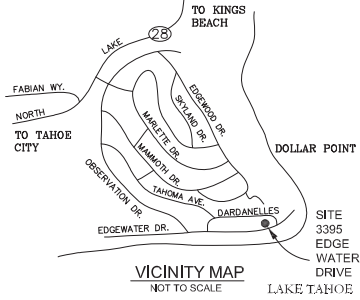
SETBACK REQUIREMENTS
SETBACK REQUIREMENTS PER DEVELOPMENT STANDARDS FOR THE RS ZONING FROM THE PLACER COUNTY TAHOE BASIN AREA PLAN
FRONT: 20 FEET FROM THE FRONT PROPERTY LINE.
SIDE: 15 FEET TOTAL, 5 FEET MINIMUM
REAR: 10 FEET

COVERAGE (ON-SITE)
LOT AREA = 10,182 SF (~234 acres)

RESIDENCE / GARAGE	1,732 SF
AC DRIVEWAY	1,142 SF
REAR WOOD DECK AND STAIRS	172 SF
WOOD ENTRY DECK AND STAIRS	49 SF
CONCRETE STAIR LANDING #1	10 SF
CONCRETE STAIR LANDING #2	10 SF
FLAGSTONE AREA #1	66 SF
FLAGSTONE AREA #2	79 SF
FLAGSTONE AREA #3	24 SF
WOOD STEPPERS AT GRADE (ON-SITE)	24 SF
MIXED ROCK / COMPACTED DIRT PATH	166 SF
COMPACTED DIRT AREA	188 SF
STONE STEPS	14 SF
TOTAL	3,676 SF (~36.1% COVERAGE)

COVERAGE (OFF-SITE)
AC DRIVEWAY 182 SF

- NOTES**
- UNDERGROUND UTILITIES SHOWN HEREON ARE FOR REFERENCE ONLY AND THEIR LOCATIONS SHOULD BE VERIFIED BY CONTACTING THE VARIOUS UTILITY COMPANIES.
 - LOT SQUARE FOOTAGE = 10,182 SF (.234 AC)
 - PROPERTY LINES SHOWN HEREON ARE BASED ON RECORD INFORMATION AND NOT A FIELD SURVEY.
 - EASEMENTS AFFECTING THIS PROPERTY MAY NOT ALL BE SHOWN.



REV.	DATE	DESCRIPTION	APPROVED	DATE



TOPOGRAPHIC SURVEY
R & R EDGEWATER LLC
3395 EDGEWATER DRIVE
APN 093-082-007

COMP. _____ DESIGN _____
DRAWN _____ PROJ. ENGR. AT _____

PROJECT #: 22.007
SCALE: 1" = 10'
HORIZONTAL: _____
VERTICAL: _____

DATE: 3/31/22

1

Attachment D
Soil Consultant's Land Capability Report, incl. Soil Descriptions (1 test pit)

DAVIS²

CONSULTING EARTH SCIENTISTS

P.O. Box 734 · Georgetown, CA 95634 · Tel. (530) 559-1405; davis2consulting@sbcglobal.net

**Land Capability Challenge
R&R Edgewater LLC
3995 Edgewater Drive
Placer County, California
(APN 093-082-007)**

August 16, 2023

INTRODUCTION

A soil investigation was conducted on the parcel on July 25, 2023. The objective of the study was to identify soils and other features and relate them to Land Capability, which is administered by the Tahoe Regional Planning Agency (TRPA) for the purpose impervious coverage regulation, by Chapter 30 of the Code of Ordinances.

The parcel supports an existing single-family residential dwelling on 0.234 acres of land, located at 3995 Edgewater Drive, Tahoe City, California. This work is advanced at the request of R&R Edgewater LLC.

Soil information contained in this report is for the strict use of land capability and it should not be used for building foundation design, slope stability, hazard waste assessment or seismic analyses. In this report the term “soil” refers to the surface weathering of rocks and sediments as typically used in agriculture, forestry, and erosion control. In contrast, the typical engineering use of the “soil” refers to the strength of deeper materials, often a few to tens or more feet deep.

ENVIRONMENTAL SETTING

The site is located at 3395 Edgewater Drive, Tahoe City, California.

Vegetation consists of Jeffrey pine, White fir, manzanita, and Huckleberry oak. Slopes range between 17 and 34 percent on a southerly aspect. There are no stream environment zones (SEZ) influencing this parcel.

Soils are shown on TRPA map sheet D-6 as UmE (Umpa very stony sandy loam, 15 to 30 percent slopes). Geology (Mathews / Bennett, 1968) is characterized as Tv^A (Andesite). Bailey’s (1974) geomorphic analysis shows the parcel within D₁ (Toe slope lands).

METHODOLOGY

For this investigation, we surveyed the parcel and immediately adjacent areas (Fig. 1). We then measured and technically described one discrete soil profile representative of the site-specific landform. By use of hand tools, we exposed the near- surface sediments to depths ranging from 0 to 4 feet deep. We then formally described and measured the physical properties of the soils following procedures of the National Cooperative Soil Survey. We similarly documented groundwater levels using visual methodologies. Information gathered at the site was compared to the *Soil Survey of the Lake Tahoe*

Basin, California-Nevada (Rogers et al, 1974) and to criteria of the *Land-Capability Classification of the Lake Tahoe Basin, California-Nevada* (Bailey, 1974) for proper placement in the appropriate land capability class. A detailed topographic base map supplied by Tieslau Civil Engineering, Inc. was available in the field for ground control and slope analysis. Information pertaining to land capability districts is shown on the base map.

FINDINGS

Soils are found to be unnamed (XXX) and well drained, members of Soil Hydrologic Group B. They can be characterized having stony loamy sand top soil approximately 12 inches thick, over very bouldery sandy loam to sandy clay loam subsoil to 44 depth.

These soils are different than those shown on the TRPA map sheet because unlike Umpa, which are shallow to moderately deep over hard andesitic materials, these are interpreted to have formed from wave worked or colluvial sediments. Clasts are well rounded in an alluvial matrix as opposed to consolidated andesitic lahar. These soils vary from the Inville series, mapped elsewhere in the Lake Tahoe basin, which display sandy loam subsoil textures, as opposed to bouldery sandy clay loams found onsite.

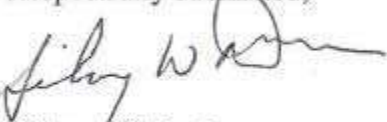
Natural slopes are measured at dominantly 17 percent. The upper part of the parcel has been over-steepened by fill placement associated with Dardanelles Avenue construction and the base of the lot has been over-steepened by cut to construct Edgewater Drive.

CONCLUSIONS AND RECOMMENDATIONS

Soils observed are unnamed (XXX) and place in Land Capability Class 4, based on criteria found on *Table 4- Basis of capability classification for Lake Tahoe basin lands* (Bailey 1974).

Please refer to the following soil profile description(s) that support the findings and the attached map showing the spatial distribution of the appropriate land capability class(s) on the parcel.

Respectfully submitted,



Sidney W. Davis,
CPSS /SC No. 1031

Representative Soil Profile Descriptions

- Oi 0 – 2 inches, conifer, needles and duff.
- A1 2 - 4 inches, grayish brown (10YR 5/2) and very dark grayish brown (10YR 3/2) moist; stony loamy sand; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many fine medium roots; many very fine and fine interstitial pores; slightly acid; ten percent gravel and thirty percent stones, clear smooth boundary.
- A2 4 - 12 inches, grayish brown (10YR 5/2) and very dark grayish brown (10YR 3/2) moist; gravelly loamy sand; weak fine granular structure; soft, loose, nonsticky and nonplastic; many fine medium coarse roots; many very fine and fine interstitial pores; slightly acid; ten percent gravel and thirty percent stones, clear smooth boundary.
- Bt1 12 – 28 inches, light brown (7.5YR 6/3) and brown (7.5YR 4/3) moist; very blocky sandy loam; moderate medium subangular blocky structure; slightly hard, very friable, slightly sticky and nonplastic; common fine medium coarse roots; common fine medium tubular pores; few thin clay films line tubular pores; medium acid; ten percent gravel and thirty percent boulders; gradual wavy boundary.
- Bt2 28 – 44+ inches, light brown (7.5YR 6/4) and brown (7.5YR 4/4) moist; very bouldery sandy clay loam; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine medium coarse roots; common fine medium tubular pores; common thin clay films occur on faces of peds and line tubular pores; medium acid; ten percent gravel and thirty percent boulders.

Notes: Colluvial deposits over lakeshore.

Soil Series: Unnamed (XXX)

Soil Classification: Loamy-skeletal, mixed, Ultic Haploxeralfs

Soil Drainage Class: Well drained

Hydrologic Soil Group: B



Fig. 2 Landscape



Fig. 3 – soil profile.